Financing the Green and Just recovery

December 2020
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• To realise the C40 Mayors’ Agenda for a Green and Just Recovery, cities must identify and prioritise high-impact policies and mobilise the financial resources to pay for them. This will require navigating financial challenges that have been aggravated by the COVID-19 pandemic.

• To steer cities through the myriad financing options open to them, C40 Cities and Climate Finance Advisors (CFA) have compiled a finance taxonomy of on- and off-budget resource mobilisation strategies and sources, as well as a broader decision-support framework. We set these planning tools against a backdrop of current trends in green and Sustainable Development Goal (SDG) finance, COVID-19 green recovery stimulus plans and innovative financing approaches.

• A shortlist of potential policy choices for the eight action areas of the Global Mayors COVID-19 Recovery Task Force (MTF) agenda shows there are multiple sources and mechanisms for delivering on chosen policy options. Some strategies involve the direct use of city government funds, while others draw on indirect resources through third parties, often by tapping the capital markets or attracting private investment. There are advantages and disadvantages to both direct and indirect sources, some of which have been magnified by the COVID-19 pandemic.

• The direct financing of policy solutions depends very much on own-source revenue and often other public authorities and government entities at the provincial, national or international level. Policy considerations need to be crafted with national governments in mind (in addition to other institutions that provide budgetary support or have legislative or regulatory authority), considering their statutory powers and/or significant contribution to local-government finance in sectors with a significant impact on the low-carbon transition.

• Indirect financing relies heavily on local-government agenda-setting, as well as policy and regulatory development and advocacy, and requires a particular set of skills, such as tendering, stakeholder engagement, coalition building and investment promotion. Indirect financing from private investors is contingent on the underlying attractiveness of the investment opportunity in question, as well as the macroeconomic and financial-market conditions for investment.

• C40 and CFA have also undertaken a review of trends and green recovery announcements related to national fiscal stimulus packages, as well as from financial-sector regulators, private market actors and development finance institutions (DFIs), to give context to the range of financing sources and flows available to support the MTF Agenda.
Many national stimulus efforts include measures to foster a green and just recovery. However, there is evidence to suggest that a business-as-usual approach to economic recovery could well overwhelm whatever green and social equity measures are being proposed, with a substantial risk of capital being channelled to high-carbon projects or sectors. To overcome the inertia of past practices, cities, other levels of government and financial institutions should consciously incorporate their pandemic response into considered long-term sustainable development, climate action and social justice plans.

Financial innovation — including labelled loans and bonds with defined social, environmental and/or climate objectives — is a growing feature of the public and private capital markets and may offer direct or indirect financing to cities to support the MTF Agenda. This trend is further reinforced by the actions of regulatory and supervisory bodies, which are elevating climate and biodiversity risks as material factors in finance.

In the private financial sector, there are strong signals from regulators and leading market actors around the world that climate change and biodiversity loss present risks to financial markets and returns, and that investments and lending focused on sustainability are important to economic growth and development, as well as to the bottom lines of financial institutions. Trends in financial markets and the objectives of the MTF look to be well aligned, though the scale of private market finance flowing to climate transition and resilience currently lags what is needed.

DFIs, including the multilateral development banks (MDBs), have accelerated investments and availed of innovative capital-market instruments since the start of the pandemic to support sovereign and sub-sovereign borrowers, complementing their efforts in recent years to reorient their advisory services, lending and investment towards the goals of the Paris Agreement. While flows are increasing in this regard, there is still a sizeable gap between capital flows and need, particularly when it comes to subnational entities, which suffer from a paucity of funding. Newly launched funds to support municipal climate action are a promising development here.

In general, the availability of finance from capital markets, the corporate sector and public sources will not be the primary barrier to cities pursuing a green and just recovery, provided an established range of financing preconditions are in place. The pre-pandemic challenges that cities faced in accessing resources to finance their operations and capital programmes remain, however, and are being more acutely felt in some cases.

To overcome these hurdles, national governments and development institutions must redouble their efforts by developing long-term national urban growth strategies, creating dedicated city financing windows commensurate with resource needs and providing cities with adequate administrative and project preparation support.

At the same time, cities must equip themselves to attract resources and deliver social benefits by sending the appropriate green and just policy signals, putting in place proper regulatory regimes, engaging in effective stakeholder engagement and long-range planning, and investing in technical and administrative capacity for revenue generation and fiscal management to ensure that private and public resources are effectively channelled and deployed at scale.
1. Background and context
1.1 The goals of the Global Mayors COVID-19 Recovery Task Force

On 7 May 2020, the C40 Cities Climate Leadership Group and 11 of its member cities established the Global Mayors COVID-19 Recovery Task Force (MTF). The MTF set out principles — now endorsed by more than 40 C40 city mayors — and an action agenda for a green and just recovery. The intent is to guide and inspire city action and influence policymakers at other levels of government, so that programmatic and capital investments prioritise not only job growth and economic development in response to the severe recessionary impact of the COVID-19 crisis, but also the long-term emission-reduction and resilience challenges of climate change and social equity. Indeed, the MTF’s accompanying call to action, aimed at national and regional governments, central banks and international finance institutions, affirms that the two goals are mutually beneficial.

The C40 Agenda for a Green and Just Recovery rests on nine principles set out by the MTF:

1. The recovery cannot be a return to business as usual.
2. The recovery must be guided by public health and science.
3. Excellent public services, public investment and resilience will form the most effective basis for recovery.
4. The recovery must address issues of equity.
5. The recovery must improve the resilience of cities and communities.
6. New technologies, industries and jobs can result from addressing climate action and equity.
7. The recovery must be healthy, sustainable and equitable.
8. Ensure that national governments support both cities and the investments needed in cities for an economic recovery that is healthy, equitable and sustainable.
9. Ensure that international and regional institutions invest directly in cities to support a healthy, equitable and sustainable recovery.

The MTF also identified eight action areas for policy advancement and investment, as part of a holistic agenda to address pressing climate, biodiversity, equity and well-being issues:

- Create good new green jobs fast.
- Support and lift up essential workers.
- Training and upskilling to enable a just transition to an inclusive economy.
- Deliver a post-COVID safe and resilient mass transit system.
- Provide fundamental public services for all.
- Create ‘15-minute cities’.
- Give streets back to people.
- Build with nature

Chapter 2 and Appendix A outline policy options to support these action areas.

This paper primarily aims to inform cities how they can finance a green and just recovery. It offers guidance on selecting policies that will support the MTF Agenda, address COVID-19 green recovery imperatives, are suited to their circumstances and are compatible with realistic financing strategies. Secondary audiences include key stakeholders in cities’ successful recovery, especially with regard to resource mobilisation, including national governments, development and other international financial institutions and the private sector.
The MTF Agenda underlines how a ‘return to normal’ or business-as-usual recovery would fail to address many of the risks and inequities exposed and compounded by the COVID-19 pandemic, such as climate change, job insecurity, low wages, income inequality and stresses on biodiversity and natural systems.

Even before the pandemic, indicators of climate change were, at best, trending sideways, with most suggesting a widening gap between present trajectories and the actions needed to flatten the greenhouse gas (GHG) emissions curve and avoid a global temperature rise of greater than 1.5 degrees Celsius by mid-century.

The trends in 2015-2019 were not encouraging: carbon emissions continued their year-on-year rise, average yearly temperatures were the warmest on record, the rise in sea levels accelerated and oceans became more acidic, the depletion of sea ice continued, food insecurity rose and gross domestic product (GDP) fell in developing countries due to climbing temperatures. To stand a chance of limiting warming to 1.5°C, we will need to cut global emissions by 7.6% a year through 2030 — something that will require an unprecedented low-emission economic transformation. The global pandemic has led to a short-term reduction in GHG emissions, which are projected to be down 4-7% on the year in 2020. This reduction will not be sustained without careful planning for a low-carbon recovery, however. Should there be a return to business as usual, the one-time reduction is likely to have a negligible effect on the long-term warming trend.

Recovery packages in past financial crises and recessions have tended to focus on the speed of the recovery. They have generally proved more effective if, in addition to near-term considerations such as rapidity, affordability and simplicity of implementation, they have paid attention to more holistic matters of public good, such as the long-run economic multiplier, contributions to the productive asset base and national wealth, and the impact on inequality. There is strong evidence that many green stimulus policies are well suited to such considerations, so are economically advantageous. Activities such as renewable energy infrastructure investments, energy-efficiency retrofits and electric-vehicle incentives promote cost-effective local job creation, grow the fixed capital stock, produce long-run cost savings and support learning curves for future cost reductions.
For a sense of the job-creation multiplier potential of a green recovery, Figure 1 shows International Energy Agency (IEA) and International Monetary Fund (IMF) ranges for key carbon-mitigation technologies and measures, such as efficiency, solar photovoltaic generation and urban transport investment — all of which are well suited to city objectives, at or near the top of the scale.¹²

**Figure 1. Jobs created per USD 1 million of capital investment**

[Bar chart showing jobs created per USD 1 million of capital investment for various technologies and measures, such as new grid, existing grid, new hydro, new nuclear, wind power, solar PV, unabated coal-fired power, unabated gas-fired power, hydrogen production, CCUS, reduce methane emissions, urban transport infrastructure, high-speed rail, building efficiency retrofit, efficient new buildings, industry efficiency, jobs in construction, jobs in manufacturing, total jobs.]

The IEA and IMF conclude that an aggregate USD 1 trillion annual stimulus investment in low-carbon energy and energy efficiency could help lift global GDP by 3.5% between 2021 and 2023. Another study capturing global expert opinion on policies for strong economic recovery and climate change benefits similarly concludes that spending on clean-energy research and development (R&D) and infrastructure investment are the best ways to deliver climate and long-run multiplier effects. Research suggests that there are enormous social, environmental and financial benefits to be had from investments in adaptation and resilience and from linking infrastructure and urban development investments to natural system services (Box 1).

Box 1. Economic returns from resilient and nature-based infrastructure

New research linking natural system services to infrastructure and urban development investments shows that prioritising the following five transition outcomes could generate more than USD 3 trillion in additional annual revenues and cost savings and create 117 million jobs globally by 2030:

- Compact urban environments.
- Nature-positive infrastructure design.
- Planet-compatible urban utilities.
- Complementing human-engineered solutions with restoring and protecting nature as infrastructure.
- Nature-positive connecting infrastructure between urban areas.

Other research shows that investing in adaptation measures that improve physical and societal resilience to climate change (such as extreme heat, extreme storm events or sea-level rise) generates high net positive economic returns through avoided economic losses, higher productivity, increased innovation and social and environmental benefits.

The Global Commission on Adaptation estimates that a USD 1.8 trillion global investment through 2030 in five key resilience areas would yield more than USD 7 trillion in net benefits.
1.3 Research approach and methodology

This report relies principally on a review of literature on policy proposals and financing options that align with the objectives of the MTF Action Areas (Chapter 2), the financial challenges facing cities (Chapter 3) and the moving landscape of financial resources and mechanisms to address climate change and the COVID-19 recovery, including capital-market trends in green and social financing (Chapter 4).

The policy review generated an illustrative range of choices for cities to consider and was used to bring context to the accompanying review of enabling financing options and mechanisms. It was informed by a review of C40 policy agenda documents, academic and grey literature, and emerging global policy and capital-market responses to COVID-19. C40 experts narrowed down this longlist — a non-exhaustive mix of operating and programmatic allocations and capital investments, regulations, enabling policies and partnering opportunities — to a shortlist of 2–3 high-potential policy responses for each MTF action area. The shortlist was then used to map selected policies with financing options on a manageable scale, to identify potential sources of finance and financing mechanisms to advance the MTF Agenda.

To capture the broader landscape of potential sources and flows of finance that might support MTF recovery objectives, we examined national government stimulus packages from both mature and emerging economies, as well as announcements and programmes by selected DFIs and MDBs to support the COVID-19 recovery. To qualify the alignment of the MTF Agenda and emerging private flows of capital, we also reviewed trends among investors and financial regulators related to sustainable development and tackling climate change.

The research incorporated additional input from surveys and interviews. A survey was sent to the MTF cities to capture city perspectives on priority policies in each of the eight action areas on governance, as well as on financial instruments and resource considerations critical to their recovery. Unstructured interviews were held with a small number of municipal policy and finance experts from international organisations to capture their perspective on recovery pathways and opportunities.
2. Financing a green and just recovery: actions, resources and screening options
Chapter overview

- We present an approach that cities can use to select high-impact policies that align with their priorities under the MTF Agenda and match them with resource mobilisation strategies that fit their needs and the opportunities available.

- By distilling down the myriad sources and mechanisms cited in the considerable body of literature on municipal finance, our finance taxonomy simplifies the parameters for identifying sources of finance and facilitates the adoption of resource mobilisation strategies. It captures numerous on- and off-budget finance options for city governments, intended to reflect and respond to the varying fiscal and regulatory constraints they face.

- A ‘financing-in-action’ matrix illustrates how the shortlisted MTF action-area policies align with the range of financing strategies selected. It considers which policies are suitable for green response stimulus packages and rapid action and, given cities’ credit constraints, whether borrowing that relies on cities’ ability to issue debt is typically required.

- To help cities prioritise their policy options, we present a detailed decision-making framework, with a matrix of co-benefits, financing mechanisms, co-financing options, budgeting considerations and barriers to implementation.

- When using these resources, city leaders and decision-makers can refine their assessments of prospective policy solutions and the associated financing mechanisms in the context of their priorities and access (or lack thereof) to certain types of finance.
2.1 Policy actions

What does policy action to ensure a green and just recovery from the COVID-19 pandemic look like?

How can a city mobilise the financial resources to implement it?

The resources presented in this chapter can help cities to structure discussions on policy options, routes to finance and other selection issues related to funding and execution. Figure 2 illustrates how the finance taxonomy (Section 2.2) nests within the broader decision-support matrix (Section 2.3) to guide city leaders and decision-makers. It summarises a process for generating an informed and strategic set of choices for a green recovery and how to finance them.

To see the review process in action, we have created a shortlist of MTF-aligned policies, against which we have applied the taxonomy of financing mechanisms and sources, a ‘finance in action’ scan and the decision-support matrix to arrive at ‘finance-informed’ policy preferences.

This shortlist (see Table 1) is not meant to be exhaustive or ideal, but aims to present a number of broadly appealing and applicable policies to advance the MTF Agenda for climate action, economic recovery and social justice.

While the policies are necessarily limited in scope and the steps are simplified for readability, combined, they demonstrate how city leaders and decision-makers can turn the broad principles of a green and just recovery into concrete climate action and local investment.
### Table 1. Policy shortlist

<table>
<thead>
<tr>
<th>C40 MTF Action Area and Policy Recommendation</th>
<th>Policy description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Create good new green jobs fast:</strong> Investment, incentives and regulations to create decent, green jobs for all those looking for work and to promote a thriving, regenerative and redistributive economy</td>
<td></td>
</tr>
</tbody>
</table>
Energy-efficiency (fabric or systems) retrofits to existing buildings  
- Reduce carbon emissions from the building stock, where there is significant potential for savings and high employment  
Renewable, clean energy  
- Government roles can include development planning (regulations and approvals), policy setting, signalling and advocacy, or direct investment.  
- Policies can target both local clean-energy networks and centralised clean-energy technologies |
| **Support and lift up essential workers:** A fair, safe and healthy environment for all of those whose work has proved essential during the COVID-19 crisis, including those lacking official documentation |  
Regularise essential informal workers to ensure they have better employment conditions and social protection  
- Provide work permits, social protection schemes, affordable and accessible healthcare and minimum wages for essential workers  
- Engage informal workers in dialogue to improve working conditions, fuel sector innovation and/or forge pathways to formalise workers or sectors  
Set minimum- or living-wage standards for job categories where wages are below local-area median incomes  
- Facilitate or lead coordinated engagement between business and labour groups to establish wage guidelines and voluntary agreements, or mandatory local minimum-wage laws that reflect average living costs |
| **Training and upskilling to enable a just transition to an inclusive economy:** Actions to ensure city residents can access jobs in the growing green economy, particularly the recently unemployed or in hard-hit or transitioning (high-carbon) sectors |  
Support and deliver training programmes to meet the pandemic-induced surge in demand and to upskill and reskill the workforce for the green economy  
- Run rapid upskilling programmes to support recruitment in sectors that are in high demand due to the pandemic, such as grocery, local food production, cleaning and disinfection, and delivery services  
- Forge partnerships to design and run programmes to fill skills gaps for growing low-carbon sectors  
Establish ‘portable lifetime learning’ accounts for technological training for equitable access to the labour market  
- Upskill people who are recently unemployed through city-sponsored programmes to improve technological skills, literacy and application, especially as the economy continues to automate |
### Deliver a safe and resilient post-COVID mass transit system: Make transit better and more reliable, contributing to city economic success and equity

| Protecting and improving mass transit through the COVID-19 recovery | • Install temporary or permanent bus lanes, add additional buses to busy routes and rephase traffic signals to favour public transit  

• Maintain all-door boarding, off-board fare collection and extra cleaning  

• Maintain or increase public transit subsidies within the city’s control  

• Develop policy and financial packages for informal transport-service providers |
| --- | --- |
| Minimise transmission of COVID-19 on public transport | • Reduce passenger density on individual services and increase the space available and frequency of services, particularly during busier periods  

• Encourage continued home working and staggered working hours  

• Provide handwashing and sanitising facilities  

• Promote or require the use of face masks |
| Deploy bus rapid transit and make space for buses and multi-modal transit solutions | • Target corridors with high numbers of essential, lower-income workers for speed and reliability improvements, such as dedicated lanes, express routes and bus gates |

### Provide fundamental public services for all: Ensure equitable access to clean water, food, sanitation and affordable, healthy housing

<table>
<thead>
<tr>
<th>Large investments in more public, affordable and healthy housing</th>
<th>• Such investments generate construction jobs in the short run and allow for better crisis protection during episodes of sheltering at home, especially for women and marginalised groups</th>
</tr>
</thead>
</table>
| Large investments in slum upgrades | • Improve access to water, sanitation facilities and energy services  

• Scale up access to health facilities for testing and treatment  

• Upgrade and increase public spaces to reduce risk from climate hazards and to reduce the spread of disease |
| Urban water infrastructure for equitable access to clean water and sanitation | • Infrastructure investment to provide potable water, runoff management and sewage capture and treatment, particularly in developing country cities with large informal settlements, to improve water security and hygiene |

### Create ’15-minute cities’: Policies and regulations for the built environment, so that all city residents can meet most of their needs within a short walk or bicycle ride of their homes

<table>
<thead>
<tr>
<th>Implement urban planning policies to promote the ’15-minute city’ (or ‘complete neighbourhoods’)</th>
<th>• Policies and regulations for active ground floors, bustling streets and the flexible use of buildings and public spaces</th>
</tr>
</thead>
<tbody>
<tr>
<td>Urban densification and mixed-use development through brownfield redevelopment and transit-oriented development</td>
<td>• Planning and development regulation for mixed-use, walkable, dense urban and peri-urban centres with enhanced offerings for mobility and public transit</td>
</tr>
</tbody>
</table>
Give streets back to people: Reallocate road space to walking and cycling, increasing affordable, accessible and zero-carbon mobility options

<table>
<thead>
<tr>
<th>Provide space for street life</th>
<th>• Widen sidewalks, convert parking bays or pedestrianise streets to increase safe spaces for exercise, play and leisure</th>
</tr>
</thead>
</table>
| Invest in citywide walking and cycling networks | • Make temporary expansions to bike lanes and sidewalks permanent.  
• Provide more walking and cycling infrastructure through strategic cycling corridors, the development or designation of ‘low-traffic neighbourhoods’ and the creation of walking connections and walkable spaces between activity zones |
| Introduce low-emission zones or zero-emission areas | • Prioritise non-motorised or clean vehicle technologies by restricting petrol and diesel vehicle access. |

Build with nature: Nature-based solutions to help reduce the risks of extreme heat, drought, flooding and vector- and water-borne diseases while improving liveability and increasing physical and mental health

| Prioritise nature-based solutions (such as parks, green roofs, green walls, blue infrastructure and permeable pavements) | • Plan, regulate and/or invest in open spaces and infrastructure that create biodiversity and carbon-mitigation and climate-resilience benefits |
| City tree-planting programme | • Increase urban greenery through city-led tree planting on streets and medians and in city-owned open spaces. |
There is a range of instruments and sources upon which cities can draw to finance programmes and capital projects, which can be on- or off-budget for city governments. Cities can also steer and influence indirect spending and investment decisions by private actors through enabling policies and policy advocacy.

There have been a number of efforts to aggregate and review these financing strategies. In 2017, the C40 Cities Finance Facility published an “Explainer: How to Finance Urban Infrastructure” that reviewed the main categories (see Box 2). A 2017 report by the Coalition for Urban Transitions identified 72 major finance instruments and funding models that have been used or could be used to invest in urban infrastructure projects and programmes. Seven of these — a mix of revenue sources and investment mechanisms — are identified as priorities for closing the urban infrastructure funding gap: (1) fiscal decentralisation (building own-source revenue), (2) bonds and debt financing, (3) land value capture, (4) pricing, regulation and standards, (5) national investment vehicles, (6) international finance and (7) public-private partnerships.

The customised taxonomy of city financing options proposed here is expressly for the purpose of navigating decisions for financing the MTF Action Agenda. The taxonomy, shown in Table 2, is a high-level presentation of mechanisms and sources, subdivided into four on-budget sources that flow into city treasuries and five off-budget approaches that bypass city budgets. It includes commentary on the advantages and disadvantages of each from the perspective of post-pandemic policy needs and the recovery financing landscape.
<table>
<thead>
<tr>
<th>Flow of capital</th>
<th>Financing mechanism</th>
<th>Source of finance</th>
<th>Advantages</th>
<th>Disadvantages</th>
</tr>
</thead>
</table>
| On-budget (inflows into city coffers) | Intergovernmental transfers: annual budgetary allocations | Provincial and national government | - Familiar mechanisms for delivery  
- Capitalise on existing political relationships  
- One of several channels for stimulus | - Often structurally inflexible  
- Controlled by other levels of government  
- May be slowed or reduced by a pandemic |
| | Grants: use-specific capex and opex funding | Provincial and national government, donor agencies, foundations | - Do not financially burden local actors  
- Not subject to financial-market conditions or investor interest  
- One of several channels for stimulus | - Limited and sometimes unfamiliar sources  
- Difficult to access  
- Restrictions on use  
- Reporting and management burdens  
- One-off sources lacking longer-term financial sustainability |
| | Local own-source revenue: taxes (income, sales and property), tolls, levies and fees, payment for services | Business, consumer, households and property owners subject to taxes, users of paid public services (such as transit, waste disposal, utilities and toll roads) | - Most readily accessed and controlled sources of capital  
- Many options for targeting to promote social and economic equality  
- Can in some cases be executed quickly by city political bodies | - Burdensome to local actors, such as businesses and households, on which taxes and fees are imposed  
- Require developed and transparent public financial management structures  
- Require strong political will and public support  
- May not be politically viable or deliver revenue during a pandemic and subsequent economic crisis |
| | Public debt issuance (concessional and commercial): general obligations, green and social bonds | Public and private investors, DFIs (in some cases) | - Offers some control of size and use  
- May be more affordable in the context of the green recovery response  
- Best channel for accessing DFIs  
- Prevailing interest rates are low  
- Can be targeted at SDG-, green- and climate-oriented investors | - Subject to market sentiment  
- Imposes debt burden and interest payments  
- Requires a strong credit rating  
- Requires a legal basis for debt issuance  
- Requires strong financial management capacity  
- Imposes reporting requirements  
- May require political support |
| Off-budget (no inflows into city coffers) | **Public-private partnerships (PPPs): externally financed procurement of goods and services, public monopoly concessions** | Private investors, corporate vendors and service providers | • Generally do not burden city budgets  
• Tap into the domain expertise, management capacity, resources and capital-market access of the private sector  
• Potential to raise capital quickly  
• May reduce local reliance on higher government jurisdictions | • Difficult to design and execute  
• Outsourcing of basic services to external actors may have undesired consequences, especially in the case of service-provider inadequacy or bankruptcy  
• Subject to market sentiment and interest  
• May not offer adequate value for cities  
• May sacrifice long-term revenues for short-term benefits |
| --- | --- | --- | --- | --- |
| **Commercial project finance: debt and equity** | Public and private investors, DFIs and MDBs | • Does not burden city budget  
• Taps into the domain expertise, management capacity, resources and capital-market access of the private sector  
• Does not rely on higher government jurisdictions  
• Well aligned with economic development initiatives | • Dependent on market interest  
• May be difficult to align with public policy agenda  
• Cities may cede control to other decision-makers  
• May require political capital and face opposition and lobbying by special interests  
• May prioritise developers’ interests over local communities’, exacerbating equity concerns |
| **Revenue-backed infrastructure bonds**  
(frequently issued by quasi-government corporate entities) | Public and private investors, DFIs and MDBs | • Do not burden city budget (as long as they are not backstopped by city governments)  
• May not rely on higher government jurisdictions  
• Suitable channel for pairing with stimulus from national governments and green/ infrastructure banks  
• Potentially large in volume  
• Prevailing interest rates are low  
• Green recovery response may make them more affordable and readily accessible from DFIs  
• Can be targeted at SDG-, green- and climate-oriented investors | • Require eligible and capable institutions to issue and manage the project  
• Require a strong credit rating  
• Impose a debt burden  
• Cities may cede some control to other decision-makers  
• May be technically difficult to design and implement  
• Require the imposition of taxes, tolls and/or fees to generate revenue for debt repayment  
• Typically require political capital and slow, careful planning  
• May require trade-offs between revenue generation to attract investment and a cost burden for local communities |
| Land value-capture mechanisms (various): concessions (property development) and infrastructure finance | Private investors, corporations, taxpayers (NB: overlap with PPPs, project finance and revenue bonds) | • Do not burden city budgets (near term or at all)  
• May not rely on higher government jurisdictions  
• Well suited to urban redevelopment or densification and economic development initiatives  
• Means of attracting private capital  
• Can align with and advance urban planning and transit objectives  
• Places future tax burdens on businesses and property owners who profit from development improvements (in other words, promotes fairness and social equity) | • Investment and expected revenue may be slow and/or uncertain to materialise; dependent on market interest  
• May be technically difficult to design and implement  
• May require political capital and face opposition and lobbying by special interests  
• May be limited by laws and regulations set by provincial or national government  
• May create debt burdens and depend on uncertain revenues (instrument-specific)  
• May prioritise developers’ interests over local communities’, exacerbate equity concerns |
| --- | --- | --- | --- |
| Policy instruments to promote investment: regulations, enabling policies and standards | Private investors, corporations, taxpayers, consumers | • Do not burden city budget  
• May not rely on higher government jurisdictions  
• Not subject to market sentiment  
• Can stimulate investment without tax burdens  
• Can be designed to closely align with city policy agendas and priorities | • Resource mobilisation may be slow and/or uncertain to materialise  
• May be limited by laws and regulations set by provincial or national government  
• May be technically difficult to design and implement  
• May require political capital and face opposition and lobbying by special interests  
• May impose burdensome regulations on local businesses and households |

*Source: C40 and CFA*
Drawing on this taxonomy, Table 3 describes how the finance mechanisms and sources can apply to the shortlisted recovery policies in Table 1.

Table 3 aims to facilitate the identification of capital sources by policy action and can help narrow choices by aligning cities’ financing capabilities with their chosen priority actions for recovery. It includes basic qualifiers that offer rapid and effective screening for cities when considering policy options:

- Are the policy and finance mechanism likely to be able to draw from stimulus resources and is quick implementation possible?
- Can financing be arranged, for the most part, without borrowing or requiring cities to be investment grade?

We have assigned rough grades to each policy (++, +, 0, -, --, from best to worst), indicating the degree to which a given policy is conducive to the financing approach in the screening question.

Note that the descriptions of the financing sources denote options for policies in various stages of legal, fiscal and development maturity and are not specific to any one model or city. Individual cities will, therefore, need to assess these financing options against their own fiscal, capacity and legal circumstances. Many of the shortlisted policies include references to case studies that demonstrate concrete financing and delivery pathways.
### Table 3. Mapping action areas and policies to potential financing sources and strategies

<table>
<thead>
<tr>
<th>MTF action area and policy recommendation</th>
<th>Financing sources and approaches</th>
<th>Stimulus and rapid action</th>
<th>No borrowing or credit rating</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Create good, new, green jobs fast</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
| Energy-efficiency (fabric or systems) retrofits to existing buildings | • Private stock retrofits are off budget (owner financed); government regulations and incentives can shape and support the market.\(^{26}\)  
• Various proven mechanisms exist for capital repayment based on savings achieved from a pre-retrofit consumption/cost baseline.\(^{27}\)  
• Repayment mechanisms, such as on-bill or tax-based collection, can help improve repayment certainty and lower borrowing costs.\(^{28}\) Tying the obligation to the property (that is, a tax lien) rather than occupant/borrower may support longer-payback (deeper) retrofits.\(^{29}\) | + + | 0 |
| Renewable, clean energy | • Renewable technologies are suited to a range of financing options (for example, leasing, project finance, and managed energy services) from public or private sources.\(^{30}\)  
• Purchasing agreements for renewable energy from off-site systems can draw from on-budget operating resources (creating a long-term operating cost liability matched to the term of the purchase agreement).  
• PPPs, project finance and infrastructure bonds can all be used for public investment in renewable energy.  
• Regulations and incentives can play a market-shaping and/or supporting role for private investment. | + + | 0 |
| **Support and lift up essential workers** |                                  |                          |                              |
| Regularise essential workers to ensure they have better employment conditions and social protections | • Regulatory actions can bring workers into the formal system and apply to workplace and wage protections and minimums.  
• Regulatory actions bringing workers into the formal system can create jobs, improve wages and have broader economic and environmental benefits.\(^{31}\)  
• Government labour and service costs may be affected and fiscal space will largely depend on intergovernmental transfers, including grants and/or concessional loans from international DFIs or sources of impact finance. | + | + |
| **Set minimum- or living-wage standards for job categories where wages are below local-area median incomes** | • Minimum and living wages are achieved through regulation and collaborative agreements with the private sector, with the costs principally borne by the private sector (though they do affect the cost of government-procured goods and services).  
• Wage standards may require subsidies, paid for with on-budget resources, if new wage standards depress private employment (for example, own-source, intergovernmental and grants). | 0 | + |

| **Training and upskilling to enable a just transition to an inclusive economy** | **Support and deliver training programmes to upskill and reskill the workforce and those currently unemployed for the green economy** | • Training programmes can draw on all above-listed on-budget resources, with potential partnering (and cost-sharing) opportunities between public and private and/or not-for-profit partners.  
• Programmes can be fully outsourced and shifted to off-budget financing, for example, through PPPs.  
• Educational budgets, including grants from other levels of government, may be a budgetary source.  
• For the recently unemployed, cities may consider extending short-term employment contracts to support city services (such as transit cleaning) if there is budgetary scope to add to payrolls. | + + | + |

| **Deliver a safe and resilient post-COVID mass transit system** | **Establish ‘portable lifetime learning’ accounts for technological training for equitable access to the labour market** | • Lifetime learning accounts can draw on numerous on-budget programmatic resources and tap the educational sector or other not-for-profit or private business partners. | + + | ++ |

| **Protecting and improving mass transit through the COVID-19 recovery** | • Use a combination of operating and capital expenditure, drawing on any of the above on-budget sources.  
• Because of transit’s general reliance on operating subsidies and as fare-revenue declines may only rebound slowly, additional on-budget support needs from intergovernmental grants and/or own-source general revenue may be significant. | + + | - |

| **Minimise transmission of COVID-19 on public transport** | • These are largely on-budget operating items and draw on sources such as intergovernmental transfers and grants and own-source revenue.  
• Peak management may be accomplished in part through off-budget collaborative and/or voluntary agreements with large employers (off-budget). | + + | + |
Deploy bus rapid transit and make space for buses and multi-modal transit solutions

- Bus rapid transit and e-buses require significant capital expenditure, and a number of on- and off-budget options may be available, including bulk procurement, PPPs, land value capture mechanisms, bond issuance and project finance borrowing.
- National guarantees or transfers can support financial execution.

Provide fundamental public services for all

Large investments in more public, affordable and healthy housing

- May rely on on- or off-budget actions by public housing corporations (for example, bonds covered by rental income or government guarantees).
- Other on-budget options include borrowing from private lenders for construction, which is retired as units are sold to occupants, or accessing intergovernmental capital grants and loans.
- Affordable housing may also be privately financed and delivered through off-budget regulatory and incentive measures, such as affordable set-asides or land grants, or enabled by on-budget subsidies to reduce delivery costs.

Large investments in slum upgrades

- Capital expenditure measures, such as water, sanitation and health facilities, will generally flow from on-budget mechanisms and are likely to require support from national and international sources (grants and loans).
- Certain low-capital-investment items delivered through collaborations between slum dwellers and local government can yield tangible benefits, for example, open-space planning.
- Off-budget enabling policies, such as titling land to dwellers, can unlock private capital flows through debt financing for upgrades or multi-unit development on previously single-home plots.

Urban water infrastructure development for equitable access to clean water and sanitation

- This also depends significantly on on-budget capital investment, with support from national and international sources.
- Off-budget, project-based borrowing may be possible where costs can be recaptured through user fees and charges.
- Water and sanitation investments can be bundled with other housing and property development (see previous comments on public, affordable and healthy housing).

Create ‘15-minute cities’

Implement urban planning policies to promote the ‘15-minute city’ (or ‘complete neighbourhoods’)

- The largely involves programmatic and/or operational expenditure within existing on-budget operations and functions, such as development codes.
- Off-budget regulatory changes can spur increased private capital expenditure.
### Urban densification and mixed-use development through brownfield redevelopment and transit-oriented development

- Draw on existing on-budget operations, and off-budget regulatory functions, as above.
- On- or off-budget public capital expenditure can support an expansion of transit service options or facilities (such as interchanges).
- Land value capture or PPPs (for example, infrastructure and service concessions) may be viable for some of the capital expenditure.\(^40\)

### Give streets back to people

**Provide space for street life**

- Low- to medium-sized on-budget capital expenditure will be required (own-source or discretionary transfers, for example), depending on the interventions made.
- Property value increases may result and could feature in cost-benefit estimates.
- Off-budget regulations can be a powerful force for shaping the use of streets and sidewalks.\(^41\)

**Invest in citywide walking and cycling networks**

- As before for on-budget capital expenditure.
- The latter may be a reallocation from car-centric capital budgets from own-source or intergovernmental capital budgets.
- There may be a limited number of PPP options for bike infrastructure.

**Introduce low-emission zones or zero-emission areas**

- Largely on-budget programmatic expenditure; capital spending may be required for technology to manage zone access (for example, photo gantries).
- Budgets may be supported through vehicle taxes or fees.\(^42\)

### Build with nature

**Prioritise nature-based solutions (such as parks, green roofs, green walls, blue infrastructure and permeable pavements)**

- Expenditure is likely to be a mix of on-budget operating and capital items.
- ‘Green’ and ‘blue’ infrastructure (water conveyance, flood controls, etc) may involve a reallocation from existing ‘grey’ infrastructure budgets.
- Investments may also double as parks and open spaces and draw off-budget resources, such as PPPs or land value capture.
- Many of the investments may align with and be incorporated into subnational or national long-term bond issuance programmes.\(^43\) Off-budget regulation (such as development controls) can spur private investment and expenditure.\(^44\)

**City tree-planting programme**

- On-budget capital expenditure, requiring sufficient maintenance (operating) budgeting, particularly if the programme represents a major expansion on public green space/greenery.
- Own-source revenue or intergovernmental transfers are likely sources.
Any generalisations about policy-finance strategy pairings should not obscure the fact that many policies may benefit from a mix of sources or are versatile in their resource mobilisation options. Local governments may have a high degree of influence on the resource mix, or they may not. Cities’ role in designing or financing such policies may be direct or indirect and are, either way, highly dependent on other public authorities and government entities at provincial, national and international level.

Policy considerations need to be crafted with national governments in mind and take into account other institutions that provide substantial budgetary support or possess legislative and regulatory powers in key sectors. National governments, for example, often have authority over areas such as spatial planning guidelines, building energy codes and energy efficiency standards. Electricity grids, typically overseen by national, provincial or state governments, account for half of all carbon abatement potential in cities. Even when policy and investment actions are within their remit, cities will probably have to navigate political considerations and court public and private interests. Consequently, stakeholder engagement, coalition building and investment promotion need to be part of city planning and management.

For private actors who support many of these on- and off-budget flows, financing decisions will be contingent upon the underlying allure of the investment opportunities in question, as well as the macroeconomic and financial-market conditions for investment. Cities seeking indirect financing must be clear-eyed in this regard and realistic about the prospects, preconditions, (long) lead times and terms involved in private investment. Policy considerations at individual city level will come down to the often significant differences in budgeting, regulatory powers and debt-market access of cities globally. We explore this in more detail in Chapter 3.

The options identified in the taxonomy and the corresponding potential policy solutions will invariably require a deeper review of the specifics and local context.

This decision-support tool covers the initial steps in what should be a careful and detailed review process at city level. We would suggest another tool (see Section 2.3) for capturing important local considerations when embarking on customising, adjusting and prioritising options in a specific city context.
The **climate finance decision-making tree** guides local and regional governments through a series of questions that help them consider different financing tools. It is available through an [interactive online portal](#), where user responses generate prospective financial solutions with commentary on advantages, disadvantages and case-study resources. The same information is available in a [hyperlinked PDF](#), with full option documentation. More than 25 financing tools are described, with options signposted by local-government levels of own-source funding and their ability to access external financing.

The **C40 CFF Explainer** provides information on a wide range of finance instruments that cities may be able to access and use to achieve their capital investment priorities, grouped into:

- Basic options for urban infrastructure finance.
- Financing that can be provided through the private sector.
- Additional financing that can be provided through the public sector.
- Additional financing that can be provided through international organisations.

The **Europe-China Eco-Cities Link (EC-Link)** Green Municipal Finance position paper outlines green revenue sources and revenue-raising strategies and provides information on a range of financing mechanisms, grouped into:

- Instruments for managing intergovernmental transfers.
- Debt instruments, including those utilising the capital markets.
- Risk mitigation instruments.
- Partnership-based instruments (such as PPPs).
- Asset management instruments.

EC-Link is a sustainable urbanisation partnership assisting Chinese and European cities in implementing energy- and resource-efficient measures through best-practice and experience sharing.
2.3 Decision-support matrix: identifying policy preferences

For policy prioritisation beyond finance mechanisms and sourcing, we have put together a decision-support matrix that lists additional qualifiers and indicators that cities may want to consider.

Cities can use the tool to quickly scan selected co-benefits, co-financing opportunities, budgeting effects and potential barriers. It aims to help cities to balance competing fiscal needs and policy priorities while helping them to steer away from or navigate around particular financial or non-financial constraints. (The World Bank\textsuperscript{48} and the Coalition for Urban Transitions\textsuperscript{49} offer other decision-support tools for financing the post-pandemic green recovery; see Box 3.)

This exercise can produce a more manageable set of options that can be more thoroughly assessed, in line with typical budgeting rules and processes (for example, using cost-benefit analyses or by shadow pricing to quantify potential carbon liabilities). It can also shine a light on potential project preparation and advocacy or liaison needs with higher levels of government and/or private actors.

We group the qualifiers and indicators that can be used under five headings:

- Co-benefits — does the policy deliver other strategic gains and is there synergy with other objectives?
- Finance mechanism and source (per Table 2).
- Co-financing — can multiple public entities and/or sources other than local-government finance support delivery?\textsuperscript{50}
- Budget considerations — will the policy create or potentially reduce revenue or draw on existing budgets?
- Potential barriers (key factors that might slow or block policy implementation).
The decision-making matrix is designed to frame choices through basic yes/no (checkmark) or high/medium/low qualifiers. The full list of qualifiers can be found in Appendix B and a worked example from the MTF policy shortlist can be accessed via a hyperlinked excel sheet.

This general review of a selection of potential policy-indicator matches suggests that:

- Much city financing will be indirect — in other words, local governments will be the beneficiaries of financial decisions made by other public or private actors.
- Local-government regulatory or collaborative actions can facilitate flows of private finance to support city objectives.
- Capital and operating costs will vary and reallocations from existing capital expenditure (capex) and operating expenditure (opex) budgets may be possible.
- Lower-cost items are available — they may offer quick wins and are useful for setting policy direction and building momentum for more substantive and capital-intensive investments.

Cities should consider how to channel existing resources towards the reframed objectives of the MTF Agenda. The planning processes to shift budgets within current envelopes toward programmes and capital expenditures will take time, though many cities have shown an ability to act quickly in setting up bike lanes or re-orienting road areas for other public space purposes, such as outdoor dining and recreation. Assessing budgets for substitutability should be a near-term priority for all cities, as should their role in transitioning and divesting from high-carbon to low-carbon infrastructure and asset investment and ownership.

Box 3. Pandemic recovery guides for public investment decision-making

The World Bank’s Proposed Sustainability Checklist for Assessing Economic Recovery Interventions is a recovery planning tool for policymakers, split into short-term actions and objectives (job creation, boosting economic activity, timeliness and risk) and long-term outcomes (long-term growth potential in human, natural and physical capital, resilience to future shocks, decarbonisation and a sustainable growth trajectory).

The Coalition for Urban Transitions has published The Economic Case for Greening the Global Recovery through Cities. It includes seven priorities for national government, as can be seen in the accompanying graphic,51 and a set of policy options and assessment resources (‘policy cards’) based on high/medium/low indicators for: (1) incremental investment, (2) carbon reduction, (3) job potential, (4) ease of implementation and (5) wider benefits.

3. City financing challenges
Chapter overview

- Cities require significant amounts of finance to fund their operating budgets and capital expenditures and routinely find it challenging to add to their revenue bases and access the finance they need. The COVID-19 pandemic has only exacerbated those challenges.

- Revenue stems from the interplay between local and national governments. Regulatory, borrowing and spending authority and governance arrangements vary considerably from country to country. Coupled with other strategic and technical capacity issues at local level, these can narrow or broaden a city’s financing options.

- The suitability of financing sources and mechanisms will very much depend on the regional, capacity and development context. There are a number of support programmes to remedy gaps in capacity and to expand the range of financing options open to cities.

- Overcoming financing challenges generally requires collaboration and action by city practitioners, national governments and international institutions, particularly given the pandemic-induced near- and medium-term constraints on raising tax revenue and debt, as well as project financing.

3.1 Revenue sources

Cities draw revenue from taxes, fees and other local sources, supplemented by transfers from other levels of government. These sources fund operating and capital programmes and/or repay bonds or loans for capital investment.

There is wide variety in how city governments generate and build revenue bases; substantial differences can emerge within and between regions and even in individual countries, as can be seen in the following graphics, which compare the average revenue bases of cities in the United States (US) (Figure 3) and in Organisation for Economic Co-operation and Development (OECD) countries (Figure 4).

Figure 3. Average and select city revenue bases in the US

<table>
<thead>
<tr>
<th>150-city average</th>
<th>Federal aid 10%</th>
<th>State aid 24%</th>
<th>Property tax 28%</th>
<th>Sales tax 7%</th>
<th>Charges and fees 18%</th>
<th>Income tax 8%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Boston, MA</td>
<td></td>
<td></td>
<td>State aid 10%</td>
<td>Property tax 51%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rochester, NY</td>
<td></td>
<td></td>
<td>State aid 49%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Miami, FL</td>
<td></td>
<td></td>
<td>Property tax 32%</td>
<td>Sales tax 20%</td>
<td>Charges and fees 26%</td>
<td></td>
</tr>
<tr>
<td>New Orleans, LA</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Property taxes are often a substantial component of own-source revenue, particularly in advanced economies and global gateway cities with strong local tax collection and vibrant property markets. In the present environment, they may prove a more stable source of revenue and, thus, an advantage to cities that draw considerable budgetary resources from them.

The average U.S. city, according to the sample in Figure 4, receives 26% of its revenue from property taxes. Large cities in the Philippines and India show comparable rates, ranging from 21% to 46% of total revenue. Outliers, such as Hong Kong (4%) and Dakar (more than 80%) show the vastly different contributions of property tax to total municipal revenues.

As a rule, intergovernmental transfers tend to dominate city revenue bases in middle-income and emerging economies, particularly outside of capital or megacities. The average revenue flows from higher government levels is 80–85% in least developed countries.
The size of a city’s informal economy — a more prominent (though not exclusive) feature of middle- and low-income countries, as shown in Figure 5 — will have a significant impact on its ability to raise revenue and plan future budgetary expenditure.

Bringing workers and sectors into the formal economy can improve financial security for workers and expand the tax base, allowing governments to invest in infrastructure and programmes that foster economic and social sustainability. The elements of the MTF Agenda focused on essential workers and upskilling can address economic informality and municipal budgeting by extension.

Figure 5. Informal (shadow) economy by region (average, % of GDP)

The COVID-19-induced constraints on economic activity have reduced revenues and negatively affected both local and national economies around the globe. Pandemic-related restrictions particularly affect cities that rely heavily on local revenue sources, such as taxes and fees from retail, restaurants, tourism, travel and transit. Those that draw a large share of intergovernmental transfers from national taxes and fees from core economic activities may be similarly vulnerable.

Cities’ fiscal pressures are compounded by the increasing cost of managing the pandemic and the burden on city services. Subnational governments typically control or manage functions associated with health, education, social services and transit, all of which are under short-term cost stress from COVID-19.

According to the OECD, there is significant divergence in the impacts of the pandemic on subnational finances. This is largely down to five main factors:

- Scope and type of spending responsibilities.
- Characteristics of subnational government revenues (sensitivity to economic fluctuations).
- Fiscal flexibility.
- Fiscal health.
- Scope and efficiency of support policies from higher levels of government.  

When considering recovery priorities in the context of these factors, cities that rely on large intergovernmental transfers rather than local revenue may feel advantaged in the short term, provided those transfers can be maintained or even accelerated. Having other levels of government step in to support local spending responsibilities on an interim basis could also prove valuable, as national governments have access to capital markets in ways that cities often do not. Their ability to increase public debt levels through sovereign issuance or by tapping international donors whose resources may be restricted to sovereign entities suggests that nearly all cities will need to look to national governments for support. Broad-based strategic planning and collaboration between national and subnational governments is needed to ensure that reforms and measures to improve fiscal health and equitable resource raising and sharing emerge from the crisis. For example, to improve revenue flows for climate-friendly infrastructure, the Coalition for Urban Transitions proposes that national and regional governments levy taxes, such as value-added tax (VAT), income tax and carbon taxes to generate substantial internal revenue for transfer to local governments. These national and regional revenue sources can, thus, augment local revenue sources (such as property taxes and stamp duties, land sales, betterment levies and other user fees) to stabilise and increase locally managed public resources available for commitment to the green recovery.  

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3.2 Accessing finance

As cities move from crisis management to strategic priority-setting, they can consider a range of financing mechanisms and sources for their programmatic and capital investment needs.

The range available will vary for fiscal, legal and regulatory reasons, such as the degree of fiscal decentralisation and control over revenue, as well institutional technical and human capacity. These are interconnected. Local taxation powers and robust tax collection require solid systems (such as land registries) that can support land value capture, for instance. Growing tax bases and reliable collection methods are part of building the credit ratings needed to access private capital markets and international financial institutions. Strong institutions, long-range plans and predictable resource flows are all contributing factors when it comes to successful revenue raising and budgeting, though the predictability of resource flows will clearly be a challenge in the short term. Even in this time of crisis, cities should bear in mind the longer-term goals of institutional capacity-building for sound financial management and fiscal strength, which will enable them to tap capital markets and control their own budgetary fate.

Generalising with regard to regional differences or development context has some instructive value, but caution is warranted. Cities with low credit ratings and poor financial management can be found in high- and low-income countries alike, while many cities in the latter have strong track records of effective revenue and expenditure management. What can be said, however, is that well-developed capital markets tend to be a feature of high-income countries, generally offering their cities and governments a greater range of financing mechanisms. Moreover, higher incomes in these countries can more readily support revenue-generating infrastructure, so are more likely to see interest from private investors, whose capital can be repaid from these revenue streams. Options for finance in cities in middle- and lower-income countries are likely to be narrower.

Even in jurisdictions with deep capital markets, restrictions caused by other levels of government and/or a lack of credit ratings from external agencies can make borrowing impossible. What’s more, those cities that have the ability to borrow may have reached debt caps or find market borrowing terms unattractive. Cities may further struggle to access debt markets if their lack of institutional capacity and experience with infrastructure investment and bond and debt issuance is perceived as posing a risk to private investors and lenders typically more familiar with national authorities. Further challenges to accessing debt markets can be more directly tied to COVID-19, namely, the risk of city credit-rating downgrades as a result of pandemic-related fiscal pressures or an overall decline in liquidity in national and global capital markets that reduces financing options or drives up borrowing and financing costs.
City financing challenges precede the pandemic, but have been exacerbated by it. Of the 500 largest cities in low- and middle-income countries, fewer than 20% were rated investment grade by an international or local rating agency. Activities such as the World Bank’s City Creditworthiness Initiative, which is one of many, have been in place for several years and are structured to improve cities’ own-source revenue foundations and institutional and legal capacity to access capital markets for infrastructure funding. Newer initiatives offer a timely resource for cities managing the current crisis. The Cities Climate Finance Gap Fund, for example, is a project preparation fund to support cities in developing climate-smart investments that can attract private capital. Another resource, the Coalition for Urban Transitions ‘urban finance preconditions framework’, was created for cities considering investments that rely on debt financing, PPPs and land-based financing (land value capture). The framework is structured around a series of assessment questions and corresponding actions to improve city and national governments’ fiscal, regulatory, policy, institutional, investment and credit environments.

Similarly, there are programmes that focus solely on one type of instrument. PPPs, for example, have been granted a prominent role in the financing landscape for their ability to overcome the borrowing or balance-sheet restrictions of city governments. They have a mixed track record, with both positive and negative examples of delivering value for money.

The preconditions to success for a PPP are stringent, such as dedicated project preparation teams, information and financial-technical evaluation symmetry between parties and the existence of dispute adjudication processes. In considering PPPs cities need to ensure they have the capacity and enabling environment to manage complex PPPs, and they should analyse public services to assess where the private sector may be best placed to support, carefully weighing costs and benefits to ensure a good balance of risks and responsibilities.

The World Bank’s Public-Private Infrastructure Advisory Facility (PPIAF) provides detailed advice to governments on the policy, legal and institutional frameworks needed to ensure that PPPs achieve their objectives efficiently and effectively. It has a specific city technical assistance programme to develop public financial-management skills, strengthen credit ratings, build institutional capacity and systems, implement debt financing transactions and more.

**Box 4. PPIAF COVID-19 PPP Rapid Response Umbrella Program**

The PPIAF has created a support programme to advise governments on ways and means to best manage the impacts of the COVID-19 pandemic on ongoing or future PPPs.

Many such partnerships are in sectors that are acutely affected by the crisis, such as transport.

The programme’s services include:

- A stock-take of PPPs at all stages under different potential stress scenarios.
- Identification and assessment of associated fiscal impacts and options.
- Presentation of options for initial review, possible government actions on the PPP project or the rapid mobilisation of knowledge and resources for PPP policymakers.
A COVID-19 recovery report from the OECD suggests that a handful of priority instruments and reforms are critical to subnational economic recovery (beyond a reliance on intergovernmental transfers):  

1. Access to long-term borrowing,  
2. Gross savings,  
3. PPP and innovative financing,  
4. Project preparation and implementation support and  
5. Flexible budget rules. These reinforce the need for cities and national governments to have coordinated strategies and approaches for:

- Institutional and fiscal strengthening and revenue generation, so that revenue flows are predictable.
- Enabling legislation and clarity on fiscal-management and market-access rules to build trust with donors, ratings agencies, investors and lenders.
- Technical capacity to raise and manage revenue and for investment planning and project preparation.

When it comes to financing flows from other external sources, DFIs and MDBs are important city financiers. Most flows are indirect, through national governments, though some DFIs have funding windows and programmes in place for urban and/or climate-aligned investments. They continue to look for project opportunities and many are increasing their capital availability (see Chapter 4). Ideally, these institutions will expand their direct lending to cities to meet the financing need. Cities that can currently borrow or receive technical support from DFIs and MDBs, or whose national governments can indirectly channel resources to cities from them, should prioritise these sources. There have also been clear signals from private lenders and investors that they share the city goals outlined in the MTF Agenda. Even where cities are constrained in their borrowing space or ability, city regulatory powers can help shift private capital in ways that support the MTF Agenda.

Many of these private investors, as well as DFIs and MDBs, are channelling capital through labelled financing for social, environmental-sustainability and climate outcomes, which are contributing to financial-sector innovation. We explore all of these areas in the next chapter.
4. Supportive financing flows for a green and just recovery
• There is a significant need for additional financial resources to deliver the climate objectives of the Paris Agreement and the SDGs. It is envisioned that much of this needed capital will flow directly or indirectly to cities and be consistent with the MTF Agenda. While trends in this regard are positive, the need far outweighs availability.

• National governments and supranational bodies have pledged massive stimulus funding, while financial-sector regulators, private market actors, DFIs and MDBs have also taken action. There is an opportunity to tap into these funds to boost financing flows to cities and meet MTF (Paris and SDG) objectives.

• Government stimulus announcements show a green and just recovery to be part of national planning, but to date, this has been swamped by support for a business-as-usual recovery.

• Regulators, banks and investors increasingly deem climate and biodiversity risks to be material and market practices are taking shape with a view to aligning green and financial returns. Similarly, DFIs and MDBs are shifting capital pledged and deployment practices towards green and just outcomes. Both are relying more and more on labelled finance products and pushing financial innovation to meet the need, though scale remains an issue.

• In light of these trends, there is nothing in the MTF Agenda that cannot be financed by the range of public and private sources that typically finance local-government activities. Matching resources to the need requires stronger commitment by financiers, as well as effective policy and regulatory signalling and agenda-setting, better fiscal management, the removal of market-distorting incentives and subsidies, and greater capacity for project preparation and planning, involving both local and national governments. Further technical support and the use of credit-enhancing instruments from MDBs and international financial institutions could also accelerate financial flows.
### 4.1 Financial needs for a green and just recovery

The scale of investment needed to accommodate population growth and provide for basic services and economic development at present urbanisation rates is well documented. Estimates of global infrastructure investment needs range from USD 3 trillion to USD 9 trillion a year, with most investment required in low- and lower-middle-income countries, where urbanisation rates are highest. Likewise, there are numerous studies estimating the enormous investment required to effect the low-carbon transition and drastically reduce anthropogenic climate emissions and build resilience to climate stressors and shocks, much of which is focused in urban areas.

A 2019 report by Morgan Stanley estimates that USD 50 trillion in investment will be needed over 30 years in renewable energy, biofuels, hydrogen, carbon capture and storage, and electric vehicles. The Intergovernmental Panel on Climate Change estimates that USD 2.4 trillion will need to be ploughed into energy systems every year through 2035 to keep the global temperature rise from pre-industrial levels to less than 1.5 °C. And to reverse the alarming rate of biodiversity loss and restore natural capital for ecosystems services that support sustainable development, global spending of USD 722 billion to USD 967 billion a year may be needed over the next 10 years.

Spending, however, lags need. Restoring and conserving biodiversity is critical to achieving climate mitigation and adaptation, economic welfare and societal well-being and there is currently too little action tackling the interlinked biodiversity and climate crises. In Figure 6, we can see growing global volumes of climate-related expenditure (on mitigation and adaptation) from 2013 to 2018 (urban/rural disaggregation is not readily available). At less than USD 600 billion as of 2018, however, it remains far below what is needed.

More than 90% of this financing has been for mitigation activities, with the majority channelled to renewable energy. Cities will be interested to note that low-carbon transport is the second-largest recipient and growing rapidly, followed by efficiency investments in terms of scale. For biodiversity and natural systems, the annual financing gap between current expenditure and needs is more than an estimated USD 700 billion, the bulk of which could be closed by reducing harmful government subsidies, for example, to the fossil-fuel industry.
It is interesting to note the split in Figure 6 between public and private sources of financing. Both are critical and have a role to play. Somewhat optimistically, there appears to be a shift underway in both these pools of capital towards greater alignment with the climate emergency. Many governments’ COVID-19 recovery funding commitments have an explicit green focus, as detailed in Section 4.2 and Appendix C. Section 4.3 on market and regulatory shifts, Section 4.4 on private finance and Section 4.5 on the DFI/MDB landscape offer similar evidence of an investment-flow focus on a green and just recovery.

However, these market commitments and fiscal stimulus measures must be stepped up, so that the gains of the sustainable and just transition drive (and are not just potential ancillary benefits of) economic returns, deliver finance on the scale needed and stand up to conventional investment that is blind to these concerns or, worse, actively sets them back. The general consensus among governments and central bankers on the need for a green and just recovery needs to coincide with city government action to establish the right policy objectives and signals, effectively balance competing needs, remove incentives that work against MTF objectives and create accounting and monitoring mechanisms to measure progress towards green and just recovery outcomes.
4.2 Green and just fiscal stimulus

Tremendous amounts of stimulus capital are flowing from governments and central banks into national economies to help arrest income and job losses arising from the COVID-19 pandemic and to seed recovery from the accompanying economic recession. Two recent estimates put the global total pandemic response stimulus at USD 12 trillion\(^{84}\) and USD 15 trillion.\(^{85,86}\)

These stimulus packages can support local-government recovery and alignment with MTF policy objectives through (1) stimulus capital or operating grants designed to flow directly to support municipal budgets and programmes, (2) national government infrastructure expenditure, (3) direct income support to households and businesses and (4) indirect business support through central-bank bond-purchasing programmes.

The following list provides a sample of green and just measures from a review of national stimulus announcements, highlighted for their alignment with the MTF recovery agenda. (See Appendix C for further details on these and other country packages, including stimulus size, targeted impact and relationship to the MTF.)

- **Brazil:** An infusion of funds into the National Bank for Economic and Social Development (BNDES) for use as grants to help de-risk energy efficiency improvements and to create new financial mechanisms for increased green bond issuance for sustainable infrastructure.

- **Canada:** An acceleration of disbursements from the Federal Gas Tax Fund, aimed at local infrastructure projects, such as public transit, wastewater infrastructure, local roads and bridges.

- **China:** An extension of the vehicle purchase-tax exemption programme for new-energy vehicles for two years to increase sales of electric vehicles, plug-in hybrids and fuel-cell vehicles, as well as funding for a National Green Development Fund focused on environmental protection and pollution control, ecological restoration, green transportation and other areas.

- **France:** A programme to repair 70,000 bikes, install 1,000km of temporary cycle lanes and establish an academy for bike mechanics with a view to creating 500 jobs per year.

- **Italy:** A reorganisation of the hospital network, the recruitment of more doctors and more scholarships for medical students.

- **Japan:** Direct payments to frontline medical workers.
Such examples do not prove that a country’s overall stimulus is substantially green. Indeed, aside from the European Union (EU) and some of its member states, where green objectives are clearly leading stimulus plans, the broader evidence suggests that an overall green tilt is lacking and that green stimulus features in current national packages, as well as on an aggregate global basis, will be outweighed by continued support for business-as-usual activities that may lock-in emissions-intensive pathways.

Our research for this paper suggests that approximately USD 550-650 billion of stimulus measures are explicitly green, corresponding to 3.7-5.4% of the estimated stimulus funds committed globally. This is in stark contrast to leading example Germany, for instance, where an estimated 31% of stimulus can be considered green, with 90% of that dedicated to energy and transport.

Cities must underline to national governments the importance of green and just stimulus funds and create regulatory and market-enabling frameworks to support these direct and indirect flows. Energy systems, building and industrial efficiency, and transportation infrastructure feature prominently in many stimulus plans and may be areas with strong levels of local-government influence or control. Funding for biodiversity and natural landscapes is another area where stimulus packages and city priorities overlap and which can be aligned with municipal development and investment plans. Private businesses, too, can advocate for strong government responses to the pandemic and for green and just recovery packages: more than 1,200 major global companies have already called on governments to invest in climate action and build back better.

Stimulus packages to counter the Global Financial Crisis in 2007-2009 contained green elements, though these were rarely a driver of package design. Notable green examples from the period include:

- 80% of South Korea’s USD 38 billion stimulus package for 2009-2012 was allocated to areas such as renewable energy, green buildings, green transport, water and waste management.
- In China, roughly USD 250 billion of stimulus money for 2009-2010 was allocated to areas such as energy efficiency, water and waste management.

The results of those stimulus-induced green measures in 2007-2009 were mixed, and evaluations of their efficacy are lacking. Comprehensive evaluation measures should be considered and put in place, therefore, when developing COVID-19 stimulus measures. The experience of the Global Financial Crisis experience further suggests that:

- Greening stimulus packages involves balancing support to incumbent industries and workers and to those that are explicitly transition-oriented. Thus, whole-of-government coordination is needed to achieve policy objectives.
- Proper policy design is critical to preventing rebound effects, limiting market distortion and ensuring public money creates additionality. Supportive policy instruments that target underlying environmental externalities are key to delivering greater environmental benefits from green stimulus investments.
Complementing these stimulus funds are central-bank efforts to maintain liquidity in the corporate finance sector, such as quantitative easing (QE) or direct capital infusions. Some banks and governments are showing a willingness to attach green conditions to their programmes. The Canadian government, for example, requires companies that receive public bailouts through its Large Employer Emergency Financing Facility to disclose their potential climate-risk liabilities per Taskforce on Climate-related Financial Disclosures (TCFD) recommendations and show how their future operations will support Canadian climate and environment goals (see Section 4.3 for more on the TCFD). 96

The French government, meanwhile, is making efforts to reduce air-transport emissions through its support for the airline sector. 97, 98 These actions are generally outliers and there is concern that blanket bond-buying programmes are actually supporting dirty firms as well as green ones and may, in fact, have the implicit effect of favouring business-as-usual industries because of the current corporate bond landscape. 99 Bond-purchase programmes could be structured in a way that required central banks to avoid purchasing corporate debt from emissions-intensive companies that were not rated investment grade by at least two of the big three credit-rating agencies — Standard & Poor’s (S&P), Moody’s Investors Service and Fitch Ratings — before the current crisis began. Central Banks could also be required to explicitly target companies that meet certain criteria or thresholds (such as the 800-plus companies working with the Science Based Targets Initiative or the 2,000-plus companies identified by the We Mean Business coalition as taking bold climate action). 100, 101

Green targeting is arguably a prime concern for central banks given their core mandate to address financial-sector stability. Research on and modelling of a prospective Bank of England ‘green QE’ policy showed that if the transition to a low-carbon economy were very slow over the coming decades, climate-related events would be likely to reduce corporate profitability, leaving firms struggling to repay their outstanding debts and leading to systemic bank losses. Green QE policies, therefore, should be pursued as one of many tools to support the move away from a high-carbon, low-resilience economy. 102
The push for a green and just recovery reflects growing recognition of the untenability of current ‘climate-blind’ investment and risk-management practices in the corporate and financial sectors. This shift was underway well before the pandemic, but has very much accelerated since.103

Business and finance rankings of the top stressors that pose clear risks to the economy increasingly skew towards climate and natural-environment factors.104 Other research by the World Economic Forum in collaboration with PricewaterhouseCoopers (PwC) quantifies the immense financial value of natural capital and biodiversity services.105 An estimated USD 44 trillion of economic value generation — more than half of the world’s GDP — is at least moderately or highly dependent on ecosystem services. Biodiversity loss, therefore, presents a systemic risk to global economies. In aggregate, these trends are increasingly redirecting global financial flows towards sustainable uses that align with the MTF Agenda.

Box 6. Climate and biodiversity risk analysis

A similar effort is taking shape to require financial-market actors and companies to assess and quantify any material financial risk of biodiversity or natural capital loss from their investments. The Task Force on Nature-related Financial Disclosures (TNFD) has been formed to develop a companion framework to increase understanding of issues such as plastics in the oceanic food chain, the loss of soil fertility, pathogens (such as coronavirus) and many more and to divert finance away from activities or investment that will exacerbate them. A recently formed working group to launch the TNFD includes representatives from the Mexican, Peruvian, Argentinian, French, Swiss and United Kingdom (UK) governments, as well as more than 30 financial institutions from five continents and several think-tanks and global corporations.107
To help steer the financial sector away from dirty industries that create systemic risk, the Network of Central Banks and Supervisors for Greening the Financial System (NGFS) was formed in 2017. It brings together financial-market regulators from around the globe to share best practices and research on the role of the financial system in managing risks and mobilising capital for green and low-carbon investments. Its membership has grown substantially and covers large sections of the middle-income and emerging-economy market. NGFS has emphasised that ‘building back’ after the COVID-19 crisis must not involve a return to pre-pandemic ways, but follow a new green transition.

Similarly, in the banking sector, the Sustainable Banking Network convenes national banking associations, comprising sector regulators and individual banks in middle-income and emerging markets, to support member countries in developing national sustainable finance roadmaps. It creates a hybrid top-down (via financial oversight) and bottom-up (via individual financial institution) voluntary collaboration to shift industry practices. The 40 members boast USD 43 trillion in banking assets, equivalent to 85% of all banking assets in emerging markets. Despite domestic market constraints, these countries are demonstrating high levels of ambition and robust action to make sustainability integral to their financial markets and a necessary feature of their development pathways. Members have reiterated, however, that continued support is needed from the international community -- DFIs and investors, in particular — to implement roadmaps, de-risk markets to enable greater investment flows and strengthen financial institutions to realise new investment opportunities.

The emergence of green finance taxonomies is another recent development helping to stimulate the creation and flow of green capital as a driver of economic growth. This has been led by the European Commission, which recently approved the EU Taxonomy to guide investors, companies and issuers in setting performance thresholds for activities to address climate transition and/or adaptation and at least do no harm in four other environmental and social impact categories.

The process, started in 2018, was already influencing the sustainable finance ecosystem long before the pandemic. Countries such as Canada, Japan and Australia have embarked on or are considering developing their own taxonomies. In late 2019, the EU joined forces with 13 non-EU countries to launch the International Platform on Sustainable Finance (IPSF), a multilateral forum for policymakers in charge of developing sustainable finance regulatory measures. The World Bank has also published a guide to developing green finance taxonomies aimed at emerging economies, to clarify which activities and assets can be termed ‘green’, tailored to country-level key environmental risks and financial-market characteristics.

Finance taxonomies offer an important foundational structure for capital-allocation decisions and objectively codify green and other sustainability benefits. This deters ‘greenwashing,’ whereby green improvements are claimed but not actually delivered. Many reporting and certification standards that apply to corporate or project finance activities are also important for shaping the market and confirming that intent and output are aligned. Some of these are now becoming mandatory elements of financial disclosure practices, with key players working to harmonise sustainability reporting.
The publication of the EU Taxonomy standards, guidelines and best practices in March 2020 was very timely and will play a key role in a green economic recovery from the COVID-19 crisis. The European green bond market, which will be central to capitalising on the COVID-19 crisis to address climate issues at the municipal level, will have the environmental impact of its securities weighed against EU Taxonomy criteria and, by the end of next year, be legally required to meet Taxonomy standards. The EU Taxonomy criteria are also being discussed as the criteria U.S. green investors will demand for green economic activity and job creation.\textsuperscript{118}

Market and regulatory trends suggest that capital will flow directly or indirectly to meeting the key objectives that cities have outlined in the MTF recovery agenda. However, the quantity and types of investment attractive to private pools of capital remain contingent on national and local regulations and policy measures that shape market dynamics, as well as the allure of certain cities as recipients of funding. Cities, in response, need to send the right policy and investment planning and promotion signals for direct and indirect investment in climate- and nature-based solutions at local level.

As Chapter 3 shows, creditworthiness — itself dependent on fiscal stability, breadth and depth of revenue channels and technical capacity — is instrumental in attracting direct flows from private lenders and investors. In some instances, private-financier risk aversion due to growing climate awareness may actually create barriers alongside opportunities. For example, in 2017, Cape Town was downgraded by Moody’s after the city experienced a drought and faced issues with municipal water supply.\textsuperscript{119} If cities are unable to access sufficient capital because of poor credit ratings due to weak environmental performance, a vicious circle of climate-related capital flight could further starve cities and countries of critical funding to address mitigation and adaptation.
4.4 Private finance

Financial markets’ capacity to shift resources and provide the necessary capital to support aspirations for a green and just recovery is increasing and the broad availability of deployable capital is unlikely to be a barrier, notwithstanding localised challenges, such as creditworthiness, currency and sovereign risk and underdeveloped capital markets. Asset owners, such as sovereign wealth funds and public pensions (investing capital on behalf of governments and public employees), are recognising that while fiduciary rather than policy considerations drive their investment decision-making, the two are merging in the context of the clean-energy transition.

As fossil-fuel stocks underperform market indices and the risks rise of stranded assets that will cause write-downs in longer-dated debt and equity investments, these institutional owners are reducing exposure in favour of renewables and other less carbon-intensive assets. Dozens more sovereign wealth and pension funds globally have signed the Climate Action 100+ commitment which, among other measures, signals that vocal industry leaders are a crucial force in driving a green recovery. The Net-Zero Asset Owner Alliance (AOA) of institutional investors, which represents some USD 5 trillion in assets under management and counts industry giants such as Allianz, Swiss Re and CalPERS among its members, has committed to net-zero emission portfolios by 2050. AOA plans to achieve this through a combination of divestment, engagement, active management and new investment. Roughly half of AOA institutions are sovereign wealth and pension funds. The alliance is further advocating that governments apply the following measures when crafting stimulus packages:

- Climate screening criteria to guide government spending plans, with financial flows at minimum aligned with the Paris Agreement’s objectives.
- Extend existing clean-energy and climate policy measures.
- Launch a large-scale 1.5°C aligned infrastructure programme (UNEP FI and Principles for Responsible Investment, 2020).

Box 7. Asset-owner advocacy for climate transition

Vocal industry leaders are a crucial force in driving a green recovery. The Net-Zero Asset Owner Alliance (AOA) of institutional investors, which represents some USD 5 trillion in assets under management and counts industry giants such as Allianz, Swiss Re and CalPERS among its members, has committed to net-zero emission portfolios by 2050. AOA plans to achieve this through a combination of divestment, engagement, active management and new investment. Roughly half of AOA institutions are sovereign wealth and pension funds. The alliance is further advocating that governments apply the following measures when crafting stimulus packages:

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- Extend existing clean-energy and climate policy measures.
- Launch a large-scale 1.5°C aligned infrastructure programme (UNEP FI and Principles for Responsible Investment, 2020).

The Investor Agenda Global Investor Statement to Governments on Climate Change, signed ahead of the 2019 United Nations Framework Convention on Climate Change (COP-25) by 631 institutional investors managing more than USD 37 trillion in assets, urges governments to step up their efforts to tackle the global climate crisis and achieve the goals of the Paris Agreement. Among other things, it calls on governments to end fossil-fuel subsidies and put a meaningful price on carbon — both of which may create fiscal space for a clean-energy transition. An Open letter to EU leaders from investors on a sustainable recovery from COVID-19, also coordinated by the Investor Agenda, with close to 200 investor signatories, calls on governments to ‘prioritise climate resiliency and net zero emissions economic solutions’ and ‘embed investor participation in recovery planning’.
“to communicate the need for greater disclosure around climate change risk and company strategies aligned with the Paris Agreement — is consistent with our fiduciary duty and will contribute to achieving the goals of the Paris Agreement”.122 Public pension funds have the potential to be large sources of capital to support the green and just transition and indirectly contribute to cities’ meeting their policy objectives.123 A recently signed declaration by 12 C40 cities commits them to advocacy and action on fossil-fuel divestment and clean-energy investment (directly and through pension funds) and to long-term climate policies at all levels of government.124 Market research undertaken by JP Morgan sees trending expectations of increased financier awareness and action on climate change and natural capital.125 It polled investors from 50 global institutions, with a total of USD 12.9 trillion in assets under management, on how they expected COVID-19 to impact the future of ESG investing. Some 71% of respondents said it was ‘rather likely’, ‘likely’ or ‘very likely’ that the occurrence of a low-probability/high-impact risk, such as COVID-19, would increase awareness and fuel global action to tackle high-impact/high-probability risks, such as those related to climate change and biodiversity loss.126

Evidence is also emerging that investments with strong ESG credentials are outperforming those with less attention to sustainability. From the start of 2020 to the first week of August, 64% of actively managed ESG funds beat their benchmarks, compared with 49% of traditional funds.127 Capital is moving towards these investments as a result: inflows into labelled/marketed ESG funds globally topped USD 45 billion in Q1 2020, compared with USD 385 billion in outflows from the fund universe overall.128 Such ESG funds are likely to be substantially invested in listed equities, followed by corporate and public debt. Flows to cities from these types of fund will be indirect, as the finance is principally channelled through corporate entities. Nonetheless, the synergy between the MTF policy agenda and the mood of many large businesses and investors is noteworthy. Strengthening government regulations and standards that direct private capital towards sustainable businesses and assets should be a recovery priority. Actual and prospective policy signals are, in fact, already showing up in market forecasts. The financial returns of many capital-intensive economic sectors are expected to be severely impacted as soon 2023-2025, such as coal plants or internal combustion engine vehicles.129

A growing market for financial instruments structured around climate, sustainability and social objectives can connect private capital-raising and private investment channels for government finance through the bond market. Over the past decade, green and climate bonds — corporate, sovereign, sub-sovereign and public-authority130 — have moved from niche to mainstream and now bring capital both directly and indirectly to cities through green buildings, renewable energy, water systems, clean vehicles, transport systems and more, as can be seen in Figure 7.

Even with the pandemic, The Climate Bonds Initiative expects green issuance to grow from USD 258 billion in 2019 to USD 350 billion by year end 2020.132 A number of national governments and corporations have recently issued sizeable green bonds. Bloomberg New Energy Finance (BloombergNEF) reports that the German federal government issued a USD 7.7 billion sovereign bond in September, while the Swedish government and French utility Électricité de France (EDF) issued green bonds totalling more than USD 5 billion.133
An EU initiative will have an even bigger impact on green bond standards and practices from 2021, when the bloc plans to issue USD 267 billion worth of green bonds to finance a third of its rescue package. A similar class of instrument — social and sustainability bonds — is also growing as a result of the pandemic. Issuance volumes are expected to reach USD 150 billion in 2020, with Moody’s recently raising its 2020 estimate by 50%.

The EU is once again leading the charge, issuing USD 20 billion of social bonds in October 2020 to finance a job support programme. The issue attracted great interest and was heavily oversubscribed, with USD 275 billion worth of bids to buy a share of what is seen as a new type of safe asset. Since 2017, cities such as Los Angeles, Paris, Barcelona, Toronto, Madrid and Vancouver have all issued social or sustainability bonds.

### Innovations in green and sustainable finance, emerging instruments

#### Emerging instruments

**Sustainability-linked bonds and loans**

Sustainability-linked bonds and loans are structured to achieve ESG-linked goals. They can be used for a much wider range of corporate purposes and social and environmental benefits than climate bonds. They tend to be dynamic and operate on an incentive system: if the borrower meets or overachieves its goals, for example, the interest rate on the loan or bond can be reduced, while the rate increases if the borrower falls short of its targets. Issuance volumes have grown from a few billion USD in 2016 to more than an estimated USD 100 billion in 2020. Examples of corporate issuance related to city operations or MTF Agenda areas include:

- A USD 3 billion line of credit from a syndicate of banks to building services technology company Johnson Controls, with pricing tied to the GHG emission reductions the company achieves from customer energy efficiency and renewable energy projects and from its internal operations.
- A GBP 1.4 billion (USD 1.85 billion) loan to UK private utility Thames Water, with pricing linked to its Global Real Estate Sustainability Benchmark Infrastructure Score, an ESG benchmark for infrastructure assets.
- A ZAR 1.6 billion (USD 97 million) sustainability-linked loan from Standard Bank to South African real-estate company Equites Property Fund Limited, with the interest rate linked to the achievement of ESG performance targets, such as green building certifications, product governance, business ethics and human capital.

**Social impact bonds**

Social impact bonds are unique PPPs that fund social projects through performance-based contracts. Investors provide capital for projects that will create better social outcomes and are only repaid by governments if and when those projects achieve their pre-defined metrics. Unlike social bonds, which are primarily issued by large banks, DFIs and MDBs, social impact bonds are more likely to come from local public institutions.

According to S&P, social bonds are emerging as an unexpected weapon against...
COVID-19 and are outpacing green bonds, with issuance quadrupling so far this year. The Social Finance Database reports that, in the year to date, there have been 138 social impact bonds in 27 countries worth USD 441 million. New York City, in partnership with Goldman Sachs and Bloomberg Philanthropies, recently launched the first social impact bond in the U.S., worth USD 9.2 million. The funder, Goldman Sachs, will only receive a return on its investment if the programme the bond is funding meets a specific performance metric (reducing jailed adolescent recidivism by 10% or more, leading to cost savings that New York City will use to repay Goldman Sachs). Other recent examples include a USD 2 million two-year social impact bond issued by the City of Buenos Aires to improve long-term employment outcomes for underprivileged individuals and a GBP 1 million (USD 1.3 million) four-year social impact bond issued by Birmingham City Council for children aged 11-15 in residential care.

Crowdfunding and financial digitisation

Crowdfunding platforms that draw financing resources from numerous small and disparate sources (principally individuals) have proved adept at channelling investment to community-scale projects, such as solar parks, or to businesses or charities with explicit social or local equity objectives. Improved digital platforms and the digitisation of data have enabled the faster and more cost-effective collection of information and swifter transactions, broadening the pool of potential finance sources for certain projects and enterprises. In Memphis, Tennessee, crowdfunding for a cycle track linking a neighbourhood to nearby parks and trails contributed a small but vital portion of the finance otherwise delivered by city grants and foundations through a crowdfunding platform for environmental and community development initiatives around the U.S. City-sponsored or -directed platforms, or investments in 5G digital technology, can accelerate the role of crowdfunding and digital finance.

Prospective instruments

Debt-for-climate swaps, nature performance bonds (NPBs)

A debt-for-climate swap is a concept of conditional debt relief that forgives the debt burden of sovereigns or sub-sovereigns in exchange for climate change-related spending commitments, such as investments in renewable energy, climate resilience and keeping fossil fuels in the ground. This tool could help solve prospective debt crises in emerging or distressed markets as a result of the pandemic-induced economic downturn and contribute to progress towards achieving climate goals. Instead of debtor defaults leading to creditor losses, the funds are reinvested in the debtor country or city, offering immediate debt relief combined with tangible benefits for local communities. The concept is rooted in debt-for-nature swaps, many of which have been implemented in recent decades as a tool for biodiversity conservation in countries such as Brazil, Peru, Indonesia, Madagascar and Seychelles. Similarly, a proposed standardised structure for NPBs, for both new debt issuance and existing debt restructuring, would see issuers such as governments receiving relief on interest and principal if they achieved agreed nature-based outcomes, such as protecting forests, restoring wetlands and reducing threats to wildlife. National entities are the most likely counterparties to investors in debt-for-climate swaps or NPBs, though cities can be indirect beneficiaries where climate/nature investments are urban focused.
Hybrid sustainable infrastructure

Sustainable infrastructure investment has primarily been driven by development banks and impact investors, but should be attractive to institutional investors, such as pension funds and insurance companies. Climate-resilient infrastructure offers investors projects with low ESG risk profiles, designed to minimise the physical and transitional risks associated with an asset. To match the investment need with resources, Global Infrastructure Basel proposes the creation of a specific infrastructure asset class for institutional investors — hybrid sustainable infrastructure (HSI). Rather than having diverging interests between the equity and debt holders of a particular infrastructure project, HSIs would pool debt and equity into one product.\(^{155}\)

Just transition bonds

Transitioning from a high-carbon to a low-carbon economy requires industrial and technological shifts and runs the risk of displacing workers in incumbent sectors. Bond issuance for a green recovery must also prioritise a just transition — a normative set of expectations that is emerging to ensure that addressing climate concerns reduces rather than exacerbates social inequity. Frameworks for ‘just transition’ bonds from credit-worthy sovereign and sub-sovereign entities can draw on existing green, climate and social bond frameworks (such as those of the Climate Bonds Initiative and International Capital Market Association), as well as International Labour Organization’s just transition guidelines.\(^{156}\)

While these financial instruments and flows are impressive, they fall far short of what is needed. Former United Nations Framework Convention on Climate Change Executive Secretary Christiana Figueres challenged signatories to the Principles for Responsible Investment in 2017 to invest 1% of their assets\(^{157}\) in clean technologies and renewable energy by 2020,\(^{158}\) a figure that has yet to be reached. While private-financing intentions are strong, the results seem to be lagging.

Arguably the supply of climate-related investment opportunities that meet private capital risk-return profiles, such as resilient infrastructure or carbon-neutral technologies, does not match demand. There is a bottleneck of private capital that could otherwise find its way to funding companies and public and private projects that are central to MTF objectives.

This highlights the need for strong policy signals and enabling policies from governments to complement market leadership, as well as innovative financial instruments to bridge the gap. It also underscores the need for project preparation capacity at local-government level (or higher if it is a collaboration). This unfortunate lack of capacity has been cited again and again in stakeholder interviews as a barrier to institutional capital flows. To help close the investment gap, cities need to take steps to maximise revenues, strengthen financial management and improve data collection and reporting to enhance creditworthiness, strengthen project quality, validate the social and environmental benefits of local initiatives, equip themselves to deal with sophisticated lenders and lobby national governments for regulatory reform.\(^{159}\)
4.5 DFI/MDB finance

There is a broad set of lending and investment entities with a public good mandate, including DFIs, MDBs and other international finance institutions, such as export credit banks, that operate in parallel to private banks and investors to channel capital to higher-risk projects and markets where private finance is less readily available or to ‘crowd in’ private capital. Borrowers tend to be national and sovereign entities rather than cities. Consequently, financial flows to cities from such institutions are indirect rather than direct, but they can be significant sources of infrastructure investment capital, for example, for roads, transport systems, mobility, energy and water utilities, waste management, ports and logistics.

As large capital providers, commitments to align activities to sustainability objectives can be part of the meaningful shift in finance toward green and just outcomes. In late 2018, nine of the world’s MDBs announced a framework for alignment with the Paris Agreement, which they will follow to target and track their financial flows for carbon mitigation and climate adaptation. The declaration includes actions that cut across these institutions’ internal alignment and operations. Financing volumes are, indeed, increasing, though from a relatively low base and are well short of the USD 100 billion annual target for climate finance to developing countries in 2020 set through the UNFCCC.

Since the framework announcement, the European Investment Bank (EIB) has reset its lending policy and arguably leads the sector in terms of ambition. In late 2019, its board committed to:

- Ending financing for fossil-fuel energy projects from the end of 2021.
- Financing to accelerate clean-energy innovation, energy efficiency and renewables.
- Unlocking EUR 1 trillion of climate action and environmentally sustainable investment in the decade to 2030.
- Aligning all financing activities with the goals of the Paris Agreement from end 2020.

DFIs and MDBs are also uniquely positioned to provide technical assistance in the form of improving creditworthiness, crafting regulatory and market-making reforms, or preparing and structuring projects for cities and other entities as borrowers or indirect recipients of finance. Consultations with these institutions suggest that climate concerns remain high on borrowers’ agendas. In interviews for this report, the Inter-American Development Bank (IDB) said it had undertaken several cost-benefits analyses of government climate action, which showed net positive gains, but also that high upfront costs and equity concerns between transition winners and losers needed to be managed. Such analyses help form the evidence base for governments enacting policy changes.
MDBs have responded to the crisis by extending financing, policy advice and technical assistance to member countries and clients. These relief packages are mainly targeted at overcoming the health crisis and economic fallout of the global COVID-19 pandemic, primarily through loan instruments and, in some cases, grants and equity investments. Many already have emergency facilities and instruments in place for catastrophes and financial shocks and, by making them unavailable for drawdown, have been able to redirect them to COVID-19-related activities.163MDBs have adjusted lending limits and terms to increase capacity for fast-disbursing policy-based loans. There have also been instances of additional capital raising — primarily through the issuance of green, social or COVID-specific bonds. This affirms a level of investor interest in these instruments and in supporting financing flows for outcomes consistent with the MTF Agenda. These were inaugural initiatives for several of these institutions. Many MDBs are also taking the opportunity to repurpose programmes and beef up their ESG criteria or mandates. Table 4 summarises some recent MDB/DFI COVID-19 recovery financing announcements.

### Table 4. Select MDB/DFI COVID-19 recovery financing

<table>
<thead>
<tr>
<th>Institution</th>
<th>Description</th>
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<tbody>
<tr>
<td>African Development Bank (AfDB)164</td>
<td>Issued a USD 3 billion, three-year social bond to help alleviate the economic and social impact of the COVID-19 pandemic. It is reported to be the largest USD social bond transaction to date.</td>
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<tr>
<td>Asian Development Bank (ADB)165, 166</td>
<td>USD 20 billion commitment, with up to USD 13 billion of that constituting new resources through the COVID-19 Pandemic Response Option of ADB's Countercyclical Support Facility. About USD 2 billion will be made available to the private sector, including loans and guarantees to rejuvenate trade and supply chains, enhance microfinance loans and provide liquidity to small- and medium-sized enterprises.</td>
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<tr>
<td>Central American Bank for Economic Integration (CABEI)167, 168</td>
<td>Approximately USD 2 billion for countries in the Central American Integration System (SICA) region to finance operations for the prevention, detection and treatment of COVID-19 and mitigation of its economic impact. The bank has increased its authorised capital by 40% during the COVID-19 pandemic.</td>
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<tr>
<td>Council of Europe Development Bank (CEB)169, 170</td>
<td>USD 1 billion and USD 500 million in social inclusion bonds (seven- and three-year, respectively) issued for funding to support CEB member countries in mitigating the social and economic impact of the COVID-19 crisis. These were the fourth and fifth social bonds issued by the CEB since 2017, strengthening its leading position in the social bond market. Both were oversubscribed.</td>
</tr>
<tr>
<td>Inter-American Development Bank (IDB)171</td>
<td>Three-year, USD 4.25 billion sustainable development bond structured around SDG3 on good health and well-being for all age groups. This was IDB’s largest ever public bond issuance and followed an announcement that the IDB would direct up to USD 12 billion of additional lending to support countries in their COVID-19 response.</td>
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<tr>
<td>New Development Bank (NDB)</td>
<td>A USD 1.5 billion ‘COVID response bond’, with the proceeds used to finance sustainable development activities in the NDB’s member countries, including emergency assistance loans to its member countries.</td>
</tr>
<tr>
<td>Nordic Investment Bank (NIB)172, 173</td>
<td>USD 1.4 billion bond issuance to finance projects that alleviate the social and economic consequences of the COVID-19 pandemic; expectations within the bank are for the further expansion of its lending and a potential doubling of the loan book.</td>
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</tbody>
</table>
It may be that the crisis prompts a general acceleration in green and just transition finance from these institutions, directly and through their crowding-in effect. Greater use of credit-enhancement instruments and activities that facilitate relationships between cities and private financiers are actions that MDBs can take.174 Cities also need to position themselves for these indirect financing flows: the level of support shown by MDBs for health and social development investments as a result of the pandemic demonstrates the value of clarifying policy and investment priorities in related areas within the MTF Agenda (such as fundamental public services for all, supporting essential workers and a safe and resilient transit system). Moreover, as these lenders largely have relationships at national government level, it is crucial to have national urban development strategies in place to respond quickly to funding shifts from MDBs, and this will require better collaboration between national and local governments.175

Expectations of a significant increase in scale from MDBs should be tempered by, balance-sheet constraints and concern that MDB credit ratings could be adversely affected by the fiscal challenges facing their borrowers.176 Reviews of these relief packages further suggest there has been no significant increase in most MDBs’ financing commitments from pre-COVID-19 levels. The U.S. Congressional Research Service found that MDBs were repurposing existing programmes, establishing facilities using existing resources and streamlining approval procedures rather than raising additional capital.177 There is further a risk, also inherent to government stimulus and central-bank QE efforts, that expedience is trumping thoughtful prioritisation of green over dirty investments. This may exacerbate investment flows that generate high-carbon lock-in effects.

4.6 The outlook for green and just recovery finance

The push and pull between cities’ structural and event-driven financial challenges will persist (as capacity, governance and budgets deteriorate due to the pandemic), while regulators, governments, and private/multilateral financiers shape and accelerate trends for financing that supports climate and equity goals in the real economy.

Table 5 summarises how these trends can support the MTF Agenda. It shows where broad sources or mechanisms are likely to be more direct, indirect or both in meeting city investment needs; those elements of the MTF Agenda best suited to the source or mechanism; an indicative (relative) financing flow (in volume terms); and ways in which cities can steer or activate these resources.

The most substantial sources of near-term flows are expected to be stimulus from national governments and, to a lesser extent, resources from DFIs and MDBs. The former show signs of prioritising a green and just recovery — particularly in Europe — but governments need to emphasise this far more to avoid a business-as-usual recovery. DFIs and MDBs have responded to the crisis by flexibly deploying existing and new resources for, for instance, increasing the volume of policy loans beyond existing norms and tapping new instruments, such as social bonds, to raise capital. Overall, however, the development banks’ volume of resources specifically to address climate mitigation and adaptation falls far short of what is needed. They need to show stronger commitment to green and just outcomes.
The same can be said of the private finance sector, though here, when it comes to availability, the mismatch between green, resilient and just investable assets that generate attractive returns and other assets is more pronounced. Moves by regulators and leading financial institutions to understand and steer away from systemic risk due to climate change and biodiversity loss are accelerating, and broad and deep market shifts are probably inevitable, though more slowly than the scientific imperative would advise. The success of the green bond market and the rise of other instruments, such as social bonds and sustainability-linked loans, demonstrates a healthy level of market innovation and investor demand. Newer or prospective instruments may eventually contribute to the needed increase in financial flows.

### Table 5. Summary of COVID-19 recovery financing

<table>
<thead>
<tr>
<th>Source, driver or mechanism</th>
<th>Direct</th>
<th>Indirect</th>
<th>MTF Agenda</th>
<th>Near-term outlook</th>
<th>Mid-term outlook</th>
<th>Supportive city actions</th>
</tr>
</thead>
</table>
| **Stimulus**                | ✔      | ✔        | Good green jobs  
Support/lift essential workers  
Inclusive economy  
Safe/resilient mass transit  
Streets back to people | ❌     | ❌     | Advocacy  
Investment planning |
| **Market & Regulatory**     |        |          |            |                   |                 |                        |
| Climate risk                | ✔      | ✔        | Good green jobs  
15-minute cities | ❌     | ❌     | Policy signalling |
| Biodiversity risk           | ✔      | ✔        | Build with nature | ❌     | ❌     | Policy signalling |
| Paris Agreement-aligned finance | ✔      | ✔        | Good green jobs  
Safe/resilient mass transit  
15-minute cities | ❌     | ❌     | Regulations  
Investment planning  
Policy signalling |
| **Private finance**         |        |          |            |                   |                 |                        |
| ESG investment              | ✔      | ✔        | Good green jobs  
Inclusive economy | ❌     | ❌     | Policy signalling |
| Green or climate bonds      | ✔      | ✔        | Good green jobs  
Safe/resilient mass transit  
Streets back to people | ❌     | ❌     | Regulations  
Investment planning  
Policy signalling |
| Social bonds                | ✔      | ✔        | Support/lift essential workers  
Inclusive economy  
Public services for all | ❌     | ❌     | Regulations  
Investment planning  
Policy signalling |
| Sustainability bonds or loans | ✔      | ✔        | Good green jobs | ❌     | ❌     | Regulations  
Policy signalling |
Many of the private sources and mechanisms, such as the above-listed bonds and loans, are by and large variations on common instruments and depend on deep and functioning capital markets, city borrowing capacity and creditworthiness. They will, therefore, be more widely used in high-income countries, though they will continue to filter through to other jurisdictions. Regulators and industry networks in middle-income and emerging markets are working on taxonomies and sustainable finance roadmaps to accelerate the process.

Similarly, Paris Agreement-aligned and ESG lending and investment, while led by financial institutions in mature markets, are featuring more prominently in financial networks (regulatory and market-participant) and becoming integral to leading financial institutions in middle-income and emerging markets. Other instruments, such as debt-for-climate swaps, are more likely to emerge as something that is more specific to middle-income and emerging economies.

While there are no quick fixes for city investment needs, cities’ stated policy objectives and sustainability preferences when it comes to sources of finance are becoming increasingly aligned. What remains to be seen is whether this notional alignment can catalyse a sufficient redirection and scaling-up of capital deployment to meet cities’ green and just recovery needs. At present, the commitments bound up in national stimulus packages and portfolio profiles of private, MDB and DFI financiers show far too little capital being used to meet the Paris Agreement and SDGs. It is imperative that these commitments and profiles chime more strongly with the green and just recovery need. Concurrently, cities need to ready themselves for green capital inflows by pursuing action on a number of vectors, including:

- Advocacy.
- Investment planning.
- Administrative and fiscal-management improvements.
- Collaboration with regional and national governments’ revenue and budgetary collaboration.
- Reforming incentives and regulations.
- Creating long-term green and just development goals and plans.

<table>
<thead>
<tr>
<th>Financing instruments</th>
<th>Advocacy</th>
<th>Investment planning</th>
<th>Regulations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Crowdfunding and digital finance</td>
<td>✓ ✓</td>
<td>✓</td>
<td>Advocacy Investment planning</td>
</tr>
<tr>
<td>Debt-for-climate swaps or NPBs (prospective)</td>
<td>✓</td>
<td>✓</td>
<td>Advocacy</td>
</tr>
<tr>
<td>Hybrid sustainable (prospective)</td>
<td>✓ ✓</td>
<td>✓</td>
<td>Regulations Investment planning</td>
</tr>
<tr>
<td>Just transition bonds (prospective)</td>
<td>✓ ✓ ✓</td>
<td></td>
<td>Advocacy Policy signalling Investment planning</td>
</tr>
</tbody>
</table>

*Source: C40 and CFA*
5. Conclusions

The MTF Agenda offers a comprehensive vision for the COVID-19 recovery that focuses on tackling climate change, social equity and natural capital concerns. Cities have a broad range of financing options open to them to finance the policy options associated with the eight action areas of the agenda. C40 Cites and CFA have compiled a policy action shortlist, a financial taxonomy and a decision-support tool to help cities translate the MTF Agenda into actionable policy and investments for a green and just recovery.

A closer look at MTF Agenda-aligned policy implementation and finance reveals a landscape that is conducive to municipal success, as well as some strategies for navigating that landscape. Reviewing our policy shortlist against the decision-support qualifiers produces a number of observations:

- With stimulus funds and emergency relief flowing in many jurisdictions and the status quo disrupted, cities have a window of opportunity to secure funding for their strategy and policy agenda that aligns their COVID-19 response with global climate change goals and other equity and sustainability prerogatives.
- Regulatory and other enabling actions by local government can facilitate private finance flows to support city objectives.
- Traditionally stable capital and operating costs may vary from the norm in the pandemic context and reallocations from existing capex and opex budgets may be possible.
- There are lower-cost ways of supporting the MTF Agenda that may offer ‘quick wins’ useful for setting policy direction and building momentum for more substantive and capital-intensive investments to follow.
- Much city financing will be indirect. Local governments are likely to be the beneficiaries of financing decisions made by other public or private actors, though cities may increasingly find themselves in a position to influence the investment decisions of third parties.

Even before the pandemic, the scale of the financing needed to address urban growth, climate and equity issues was substantial. Many of these challenges have grown more acute. However, the evidence strongly suggests that investment capital is readily available and deployable to support city MTF Agenda actions if municipal projects and investment climates are conducive.

It is critical, therefore, that cities concentrate on raising revenue and attracting funding and investment capital. A disciplined focus on long-term planning, capacity-building, revenue generation and collaboration with multiple levels of government and the private sector will enable cities to take advantage of the full range of financing opportunities available.

Cities, however, cannot face or meet this challenge alone. National governments, public finance institutions and private capital must step up to meet the financing need and support cities in building the capacity and project pipeline necessary to effect the green and just recovery.

As municipalities around the world already depend heavily on intergovernmental transfers, stimulus from national governments will be critical in the near term as cities seek to implement their recovery agendas. National governments have already started to craft significant stimulus packages that could directly or indirectly affect city investment and financing. There is evidence that some of this stimulus is focused on green and just objectives, but this is not uniformly or substantially the case. It is imperative that these commitments be strengthened and other fiscal stimulus measures boosted so that sustainability and just transitional gains are drivers — not just potential ancillary benefits — of economic returns.
DFIs and MDBs have also flagged an increase in resources for a green and just recovery. As large capital providers, their commitments to align their activities with sustainability objectives could be part of a meaningful shift in finance from ‘dirty’ to ‘green’. However, reviews of these relief packages suggest there has been no significant increase in financing commitments from pre-COVID-19 levels, though the opportunity to reorient capital flows remains.

The COVID-19 pandemic has further brought to the fore a discernible market and regulatory shift in the allocation of private capital towards investments with a greater emphasis on priorities such as resilience, equity and the climate transition. While the shift will not necessarily result in financial flows to city governments, it holds promise for cities looking to attract new sources of capital for the MTF Action Agenda. The deployment of capital at scale is not guaranteed, however, particularly in the volume and time-frame scientists and experts suggest.

There is a strong economic case for an explicit emphasis on green and just outcomes. Cities need to continue advocating for and crafting their own regulations and practices, so that specific recovery packages and instruments are shaped appropriately. Technical and financial support from sources such as national governments, DFIs and MDBs can help cities to build the capacity and create the fiscal space to carry out their recovery agendas and spur private finance to take on the pipeline of bankable and investable opportunities associated with city development needs. In an environment where the demand and need for climate-related investment opportunities is high but supply is low, policy signals, private market leadership and financial-instrument innovation will be crucial to bridging the current investment gap.
Appendices
## Appendix A — MTF action area policy longlist

<table>
<thead>
<tr>
<th>C40 MTF action area and policy recommendation</th>
<th>Resource/reference</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Create good, new, green jobs fast</td>
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</table>
| Finance energy-efficiency retrofits (fabric or systems) or solar installations for existing buildings by amortising costs through property-tax assessments, on-bill financing or other third-party finance and repayment mechanisms | Building Thriving, Low-Carbon Cities\(^{178}\)  
C40 Decarbonisation Pathways Model | Energy-efficiency improvements and solar installations are labour intensive and rely (in part) on local supply chains. Efficiency or energy upgrades are principally borne by private actors. Repayment is based on savings from pre-retrofit consumption/cost baselines, with various mechanisms available to lower borrowing costs and improve repayment certainty. Property-tax repayment ties the repayment obligation to the property rather than the present occupant or borrower. |
| Renewable, clean energy                     |                    |             |
|                                             | Mayors’ Agenda for a Green and Just Recovery\(^{179}\)  
Realising the Clean Energy Opportunity Through City-Scale COVID-19 Recovery Plans\(^{180}\) | Development planning for or investment in local clean-energy networks and/or advocacy for or investment in centralised clean-energy technologies to reduce grid carbon intensity. Investing in local clean energy can include: adopting ambitious targets to send a strong policy signal and create policy certainty for long-term investment; leveraging municipal procurement; incentivising residents and businesses to deploy renewables; support the development of decentralised, off-grid energy systems; installing and upgrading district heating and cooling systems; mobilising institutional investors to shift assets from fossil fuels to clean energy; and retrofitting buildings to reduce energy demand. |
| Building-code revisions for improved energy performance | C40 Decarbonisation Pathways Model | Increase efficiency standards for new construction and apply improvement thresholds for refurbishment projects (may be modelled/performance measured or based on design, system or building-element standards). |
| Provide incentives to owners and landlords to make energy efficiency improvements to their properties (particularly residential buildings) and support the market for commercial and residential building retrofits | A Plan for Jobs\(^{181}\)  
Cities Can Strengthen Local Economic Recovery Through Building Retrofits\(^{182}\) | Grant funds to offset the high upfront cost of retrofits, particularly building-fabric and mechanical systems; support the market for commercial and residential building retrofits; strengthen energy efficiency standards for existing buildings; invest in the local buildings-sector workforce; introduce reporting and disclosure requirements. |
| Establish building energy-efficiency data reporting and disclosure systems | **C40 Decarbonisation Pathways Model**  
**Cities Can Strengthen Local Economic Recovery Through Building Retrofits**[^183] | Collation of and systematisation for access/display of performance (modelled or actual) data to improve market transparency and support voluntary and mandatory performance certification. |
<table>
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<tbody>
<tr>
<td>Electrification of heating (heat pumps, electric heaters, solar thermal)</td>
<td><strong>C40 Decarbonisation Pathways Model</strong></td>
<td>Shifting from thermal to electric heating supports the market penetration of high-efficiency technologies (such as heat pumps) and complements grid-decarbonisation and GHG reductions from the building stock.</td>
</tr>
<tr>
<td>High-efficiency cooling systems</td>
<td><strong>C40 Decarbonisation Pathways Model</strong></td>
<td>Supports the market penetration of high-efficiency technologies (such as heat pumps) and GHG reductions from the building stock where there is currently a large increase in cooling demand and expectations of an even stronger increase due to rising income levels and temperature changes (average and extreme heat).</td>
</tr>
<tr>
<td>LED lighting — new installation or lighting replacement (commercial, residential)</td>
<td><strong>C40 Decarbonisation Pathways Model</strong></td>
<td>Low-cost and quick implementation option to reduce a significant energy load from the buildings sector while supporting technology diffusion.</td>
</tr>
</tbody>
</table>
| Commission efficiency retrofits of municipal and public buildings, such as hospitals, schools, etc | **Sustainable Recovery Plan**[^184]  
**Cities Can Strengthen Local Economic Recovery Through Building Retrofits**[^185] | Use shared savings or energy service agreements to leverage private finance and technology/expertise to design and implement efficiency measures, with repayments pegged to facility energy reductions. Start work now on municipal buildings where cities can act boldly and swiftly, for example, in unoccupied and under-occupied buildings. Set more ambitious procurement standards. Upgrade social housing for the most vulnerable. |
| New cooking stoves (fuel switch) | **C40 Decarbonisation Pathways Model** | Promote or subsidise cookstove replacement with improved combustion processes or cleaner fuels in markets with high reliance on charcoal or other low-quality biomass fuels. |
| District-scale clean-energy deployment (heating/cooling/power) | **Deadline — Routemap for C40 Cities Delivering The Against Paris Agreement**[^186]  
**District Energy in Cities Initiative**[^187] | Infrastructure investment in district energy networks (public or private) to service corridors, campuses, neighbourhoods, etc, with energy services/utilities based on technologies to improve service resilience and reduce carbon emissions. |
| Invest in nature-based solutions, such as parks, green roofs, green walls, blue infrastructure and permeable pavements | **Mayors’ Agenda for a Green and Just Recovery**[^188] | Design and construct public open spaces and infrastructure that deliver biodiversity and climate mitigation and resilience benefits (for example, protection against storm surges or intense rainfall events, a reduction in the urban heat-island effect, bringing nature back into cities, etc). |

[^183]: Reference to a specific model or program for establishing building energy-efficiency data reporting and disclosure systems.
[^184]: Reference to a specific sustainable recovery plan for implementing energy efficiency retrofits.
[^185]: Reference to a specific model or program for strengthening local economic recovery through building retrofits.
[^186]: Reference to a specific deadline or routemap for delivering against the Paris Agreement.
[^187]: Reference to a specific district energy initiative.
[^188]: Reference to a specific mayors’ agenda for a green and just recovery.
<p>| Urban cooling initiatives: white roofs and hydrofluorocarbon (HFC) phase-down | Kigali Cooling Efficiency Program[^189] | Use local labour to paint roofs white, capture high-GHG refrigerants — chlorofluorocarbons (CFCs), hydrochlorofluorocarbons (HCFCs) and HFCs — for destruction and replace high-GHG cooling and refrigeration systems. |
| Invest in sustainable transport - particularly public transport and walking and cycling | Mayors’ Agenda for a Green and Just Recovery[^180] | Expand low-cost mobility and access options for citizens. |
| Electric-vehicle purchase incentives | Sustainable Recovery Plan[^90] | Create financial incentives for people to trade in internal combustion engine cars for electric vehicles. Beyond climate benefits, this helps spur jobs in new-technology vehicle manufacturing and provides waste feedstock for other industrial processes (such as steel, aluminium and glass). |
| Charging networks for electric vehicles | Sustainable Recovery Plan[^92] | Build out the charging network to support the transition to electric vehicles through public infrastructure or the coordination/regulation of private networks. |
| Invest in circular-economy strategies that prioritise waste avoidance and reduction through reuse and repair | Mayors’ Agenda for a Green and Just Recovery[^93] | Policies, regulations and collaboration with private actors to facilitate material and product exchanges and take-back schemes. |
| Expand waste and material recycling | Sustainable Recovery Plan[^94] | In advanced economies, existing systems can be enhanced by facilitating sorting, standardising and improving product designs to adequately account for end-of-life aspects and by reforming taxes and levies on waste and scrap. In developing economies, municipal operations should integrate waste and recycling and prioritise the installation of new waste-collection and sorting technologies. |
| Waste-composting infrastructure development | C40 Decarbonisation Pathways Model | Establish organic/wet waste-collection systems to remove GHG-generating elements from the waste stream, while providing material/feedstock for agricultural and horticultural operations. |
| Wastewater and landfill gas-capture development | C40 Decarbonisation Pathways Model | Deploy technologies for the capture and reuse of waste gas from municipal or private regulated waste operations. |
| Industrial efficiency programmes | C40 Decarbonisation Pathways Model | Information, incentive/subsidy or direct investment programmes to support public and private industrial facilities in improving process efficiencies. |</p>
<table>
<thead>
<tr>
<th>Develop local green business census and R&amp;D plans</th>
<th>Transition to Net-zero Emissions in LAC to Create New Jobs</th>
<th>Identify business activities/firms qualifying as green or transitioning, enumerate employment levels and changes over time, establish the baseline of firms’ strengths and weaknesses, and create R&amp;D plans (for example, support clustering/networks, establish research institution links, align with short- and medium-term green public-procurement priorities).</th>
</tr>
</thead>
<tbody>
<tr>
<td>Invest in low-carbon, clean infrastructure</td>
<td>Mayors’ Agenda for a Green and Just Recovery</td>
<td>Focus on shovel-ready projects to provide jobs quickly. Investing in connectivity infrastructure (such as clean transport, information and communications technology) is particularly relevant for the post-COVID recovery as we rethink how people will work and live.</td>
</tr>
</tbody>
</table>

**Support and lift up essential workers**

<table>
<thead>
<tr>
<th>Regularisation of essential workers, developing and applying appropriate regularisation mechanisms (such as formal recognition and documentation) to provide better employment conditions and social protections for essential informal workers</th>
<th>Mayors’ Agenda for a Green and Just Recovery</th>
<th>Integrate or regularise informal economies and innovate in formal sectors. Provide affordable and accessible services and processes: to integrate informal economies and workers, cities can provide permits, social protection schemes, affordable and accessible healthcare, set a basic income and establish formal processes. Integrate informal service economies with public service systems. Learn from and integrate the inherent creativity, innovation and flexibility that exists within informal sectors.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Set living- or minimum-wage standards for job categories where wages are below local-area median incomes</td>
<td>Raising Pay and Providing Benefits for Workers in a Disruptive Economy</td>
<td>Facilitate or lead coordinated engagement between business and labour groups to establish wage guidelines and voluntary agreements, or mandatory local minimum-wage laws that reflect average living costs.</td>
</tr>
<tr>
<td>Ensure a fair, safe and healthy environment for all of those whose work proved essential during the COVID-19 emergency (in particular, workers who delivered health, food, waste and mobility services); improve working conditions, building on COVID-19 response initiatives</td>
<td>Mayors’ Agenda for a Green and Just Recovery</td>
<td>Improve working conditions, building on COVID-19 response initiatives: scale up understanding of safety measures; scale up provision of appropriate health, safety and protection equipment; improve physical working environments.</td>
</tr>
<tr>
<td>Direct additional payments to frontline workers (healthcare, transport, waste and food-delivery workers)</td>
<td>Japan is Injecting Another $1 trillion into its Economy to Protect it from the Effects of COVID-19</td>
<td>Additional supporting income for frontline medical workers during times of heightened crisis (in this circumstance, by issuing national government bonds).</td>
</tr>
<tr>
<td>Define and regularly update a comprehensive list of frontline occupations and essential industries</td>
<td>Protecting Frontline Workers During and After COVID-19 by Defining Who They Are</td>
<td>Data capture for analysis and monitoring of supply needs so workers can safely work and equipment and devices to protect workers can be effectively sourced and deployed during current and future pandemics.</td>
</tr>
<tr>
<td>Conduct a census and map occupations and workers to determine work-at-home versus at workplace activities and populations</td>
<td>Classifying the Feasibility of Working from Home for All Occupations[^206]</td>
<td>Data capture for analysis in support of transit and mobility planning to ensure safe and convenient access to those who cannot perform job functions at home.</td>
</tr>
<tr>
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</tr>
<tr>
<td>Standardised health and safety protocols for indoor spaces (such as ventilation rates and cleaning regimes)</td>
<td>COVID-19 Employer Information for Office Buildings[^207]</td>
<td>Work with building owners, operators and facility managers (public and private) to set uniform standards and practices. Prioritise essential spaces, such as schools and other locations for indoor gathering (for example, grocery, logistics centres, etc.).</td>
</tr>
<tr>
<td>Encourage retrofits of underutilised office spaces for worker support services (such as short-term accommodation, childcare)</td>
<td>COVID-19 Stimulus Proposal: Mission Critical Facility Renewal[^208]</td>
<td>Engagement and voluntary agreements with owners who see a structural decline in office space demand to suit emerging needs, such as childcare close to employment for essential workers, short-term overnight accommodation for frontline workers needing to separate from family for health reasons or to minimise long commutes, etc.</td>
</tr>
<tr>
<td>Protection from extreme heat</td>
<td>Rising Temperatures, Deadly Threat: Preparing Communities in India for Extreme Heat Events[^209]</td>
<td>Deployment of shade, fans and efficient, climate-friendly indoor and outdoor cooling solutions to protect workers exposed to unsafe outdoor or ambient air temperatures, sun and humidity.</td>
</tr>
<tr>
<td><strong>Training and upskilling to enable a just transition to an inclusive economy</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
| Support and deliver training programmes to upskill and reskill the workforce and those currently unemployed, so that city residents can access jobs in the growing green economy; municipality-led upskilling schemes to support unemployed people and grow local markets | Mayors’ Agenda for a Green and Just Recovery[^210]  
A Green, Just and Job-Rich COVID-19-Recovery[^211] | Rapid upskilling programmes can support recruitment for activities such as grocery retail, local food production, cleaning and disinfection, and delivery services where many cities are experiencing short-term demand surges due to the COVID-19 pandemic. To strengthen the recovery, municipalities can also partner with technical and vocational education and training institutions, as well as industry associations, employers’ organisations and unions, to design and run programmes to fill skills gaps for growing low-carbon economies. Here, too, upskilling programmes can be designed to tackle local inequalities and foster careers with long-term growth opportunities, realigning youth career aspirations. |
| Establish ‘portable lifetime learning’ accounts for tech training (specifically with the aim of providing equitable access to the labour market) | Assessing NYC’s Plan to Create 100,000 Good Jobs[^212] | Upskill people who are recently unemployed through city-sponsored programmes to improve tech-skills literacy and application, especially as the economy continues to automate. |

[^206]: [Source](#)
[^207]: [Source](#)
[^208]: [Source](#)
[^209]: [Source](#)
[^210]: [Source](#)
[^211]: [Source](#)
[^212]: [Source](#)
<table>
<thead>
<tr>
<th>Vocational training for building maintenance staff on green cleaning practices and energy efficiency, recycling, waste management, water conservation, air-conditioning (A/C) system servicing and weatherisation</th>
<th>Optimising O&amp;M Practices&lt;sup&gt;215&lt;/sup&gt;</th>
<th>Collaborate with private industry actors and associations to upskill staff and improve practices so that buildings are healthier, more comfortable and more efficient.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Climate transition planning: multistakeholder consultation at local level</td>
<td>Enhancing NDC Through Urban Climate Actions&lt;sup&gt;214&lt;/sup&gt;</td>
<td>Establish local climate and equity plans by bringing together city government, utilities, the private sector (for example, property developers and manufacturers) and community organisations (that represent the vulnerable poor) to understand transition benefits and the needs of displaced workers.</td>
</tr>
<tr>
<td>Set targets for the number of women in construction and for women-owned businesses</td>
<td>Enhancing NDC Through Urban Climate Actions&lt;sup&gt;216&lt;/sup&gt;</td>
<td>Establish quotas to hire a certain percentage of women in construction and other traditionally male-dominated jobs; facilitate targeted job training to create a pipeline of suitable workers.</td>
</tr>
<tr>
<td>Train ‘solar ambassadors’ in low- to middle-income communities on effective communication and community benefit strategies for low- and moderate-income (LMI) solar adoption</td>
<td>Scaling Up Solar for Under-Resourced Communities Project&lt;sup&gt;216&lt;/sup&gt;</td>
<td>Partnerships with trusted community organisations have been shown to be crucial to speeding the adoption of home and community solar projects in LMI areas, helping to overcome the distrust that many residents of those communities feel towards utilities, energy companies and the solar industry.</td>
</tr>
</tbody>
</table>
| Energy-efficiency workforce development: A/C system servicing and weatherisation training programmes | Funds to Help Developing Countries Comply with their Obligations Under the Montreal Protocol<sup>217</sup>  
Low Income Home Energy Assistance Program<sup>218</sup> | Drawing on the models of Multilateral Fund support for A/C and refrigeration servicing and the U.S. Low-Income Home Energy Assistance Program, develop and deploy newly trained workforces to save energy, reduce emissions and keep jobs and capital circulating in local communities. |

### Deliver a safe and resilient post-COVID mass transit system

| Protecting and improving mass transit through the COVID-19 recovery | Public Transport After COVID-19: Re-Building Safe and Connected Cities<sup>219</sup> | Cities can: rapidly install temporary bus lanes; add additional buses to busy routes and rephase traffic signals to favour public transit to improve efficiency and overall capacity; turn temporary transit priority lanes into permanent, dedicated bus and bus rapid transit lanes and continue to deliver on any prior plans for public transport expansion; maintain all-door bus boarding and invest in off-board fare collection; maintain frequent cleaning of services; continue to enact or advocate for transit-oriented development policies; ensure or advocate for the inclusion of conditions requiring cleaner transit technologies; ensure that public transit subsidies within the city’s control are maintained or increased; develop institutional, policy and financial packages to help informal transport-service providers. |

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<sup>213</sup> Optimising O&M Practices

<sup>214</sup> Enhancing NDC Through Urban Climate Actions

<sup>215</sup> Set targets for the number of women in construction and for women-owned businesses

<sup>216</sup> Training solar ambassadors

<sup>217</sup> Energy-efficiency workforce development

<sup>218</sup> Protecting and improving mass transit through the COVID-19 recovery

<sup>219</sup> Deliver a safe and resilient post-COVID mass transit system
| Minimise transmission of COVID-19 on public transport | Public Transport After COVID-19: Re-Building Safe and Connected Cities[^220] | Measures to facilitate physical distancing on public transport include: reducing passenger density on individual services; increasing the frequency of services during busier periods; encouraging continued home working and staggered working hours; enabling physical distancing at bus stops and in stations; reducing contact between transport staff and passengers. Other key measures to minimise viral transmission include: frequently cleaning vehicles and stations; providing handwashing facilities and hand sanitiser; promoting or requiring the use of face masks. |
| Deploy bus rapid transit (BRT) and make space for buses and multi-modal transit solutions through dedicated lanes, express routes, BRT-light, bus gates, etc | The Success of the BRT System in Bogotá and Curitiba[^221] | Bus trips are essential for many lower-income workers, but slow and inefficient, causing delays and lost time, as well as prolonged exposure to crowded spaces. Urban centres and suburban commuter corridors can be transformed at low cost. BRT can also promote multi- or intermodal transit solutions, creating feeders for trains and subways, as well as cycling/walking to buses. |
| Use contactless payment, potentially integrated with contact-tracing capabilities | Guidance Note on COVID-19 and Transport in Asia and the Pacific[^222] | Reduce risk of viral transmission between passengers and improve surveillance to address localised disease outbreaks. |
| Review the risk-allocation structure of concession and service agreements to enable public transport operators to stay viable; explore short-term service contracts with chartered service operators | Guidance Note on COVID-19 and Transport in Asia and the Pacific[^223] | Create finance mechanisms and maintenance/operating protocols to ensure financial viability in the face of severely disruptive and unplanned events. |
| Create a data-sharing platform/system between public and private players to provide a foundation for developing mobility as a service and the expanded use of artificial intelligence in public transport and personalised mobility services | Guidance Note on COVID-19 and Transport in Asia and the Pacific[^224] | Improve route planning and capital investment decision-making to account for multiple options and servicing efficiencies, such as last-mile integration or multi-modal choice, depending on demand patterns, with public transport, private-sector ride-sharing and bike-sharing on one platform. |
| Service prioritisation/rebalancing to accommodate essential workers | Shared Mobility Providers Are Assisting Essential Workers by Offering Free or Discounted Services[^225] | Through frequency or routing adjustments, or agreements with alternative service providers (such as jitney services), provide added services to workplaces for functions that can routinely not be done from home or are essential in health emergencies. |
| Regulatory reform of highway codes and road standards to enable more flexible urban street design | Key Policy Interventions to Drive Compact and Connected Urban Growth[^226] | Ensure roads in urban areas can be designed to meet local needs, especially safety and accessibility for cyclists and pedestrians (both to shift regular commuting behaviours and to support preference changes in health emergencies). |

[^220]: Public Transport After COVID-19: Re-Building Safe and Connected Cities
[^221]: The Success of the BRT System in Bogotá and Curitiba
[^222]: Guidance Note on COVID-19 and Transport in Asia and the Pacific
[^223]: Guidance Note on COVID-19 and Transport in Asia and the Pacific
[^224]: Guidance Note on COVID-19 and Transport in Asia and the Pacific
[^225]: Shared Mobility Providers Are Assisting Essential Workers by Offering Free or Discounted Services
[^226]: Key Policy Interventions to Drive Compact and Connected Urban Growth
| Information campaigns to raise public awareness of the consequences of different transport choices and the benefits of taking public transport, cycling, and walking | Key Policy Interventions to Drive Compact and Connected Urban Growth 227 | Grow constituencies for alternative modes of transit and build support for new transit investments. |
| Accelerate investment and implementation in sustainable transport infrastructure | Mayors’ Agenda for a Green and Just Recovery 228 | Through investment planning and budget reallocations, shift transport and mobility investments away from private autos to mass transit, walking, cycling and other forms of micro-mobility. |

**Provide fundamental public services for all**

| Large investments in more public housing and affordable, healthy housing | Policy Brief: COVID-19 in an Urban World 229 Mayors’ Agenda for a Green and Just Recovery 230 | Address gaps in access to safe and affordable housing. Generate construction jobs in the short run and allow for better crisis protection during sheltering-at-home episodes, especially for women and marginalised groups. |
| Large investments in slum upgrades | Upgrading Informal Settlements to Reduce COVID-19 Risk and Strengthen Cities’ Recovery 231 | Work with informal settlement communities to get messages out and co-develop solutions. Improve access to water and sanitation facilities. Scale up informal settlements’ access to health facilities for testing and treatment. Upgrade building structures and energy access. Upgrade and increase public spaces to reduce risk from climate hazards and reduce disease spread. |
| Urban water infrastructure development: ensure that everyone has equitable access to clean water and sanitation | Mayors’ Agenda for a Green and Just Recovery 232 | Invest in infrastructure for potable water provision, runoff management and sewage capture and treatment, particularly in developing-country cities with large informal settlements, to improve water security and hygiene. |
| Consolidate information on low-cost/free internet services and technology | How Cities Are Leveraging Technology to Meet Residents’ Needs during a Pandemic 233 | Create a central database and geocoded service/resource for residents to search and find free or low-cost internet access and low-cost computers and tablets (as trialled in Los Angeles). |
| Establish digital equity offices to ensure the digital economy reaches all households | Bridging the Digital Divide Through Digital Equity Offices 234 | Build municipal human and programme capacity to address network gaps, promote affordable subscriptions and services, coordinate digital skills interventions, and understand and represent underserved community interests. |
| Create community cooling centres | The Use of Cooling Centers to Prevent Heat-Related Illness 235 | Establish neighbourhood facilities to provide temporary protection from extreme temperatures for urban poor without access to air conditioning. |
| Ensure that everyone has equitable access to affordable, healthy food |
|---|---|
| **Mayors’ Agenda for a Green and Just Recovery**<sup>236</sup>  
**How Cities Are Feeding Residents Today and Building a Better Tomorrow**<sup>237</sup> |
| Enhance city food supply chains to meet current needs and build better food systems. Cities can: shorten the city’s food supply chains to support local producers and stimulate a local economic recovery; promote access to and consumption of healthy, plant-based food through the economic support packages provided to food businesses; protect and support informal workers transporting food to the city; support wholesale and commercial food suppliers in adapting to increased retail sales; support food-sector recruitment and retention; keep more food local; reduce food waste by redistributing surplus food. |

| Access to energy: solar mini-grids |
|---|---|
| **Mini-Grids Play a Critical Role in Providing Electricity to Rural Communities and Businesses**<sup>238</sup> |
| Plan, regulate and invest in localised energy systems powered by low-carbon energy resources, particularly for underserved populations that lack reliable access to clean electricity. |

| Create health clinics for the uninsured and underserved |
|---|---|
| **How Free Clinics and Hospitals Can Partner to Care for the Uninsured**<sup>239</sup> |
| Create permanent or mobile infrastructure for preventive and critical care, viral testing, surveillance, etc, through local mini-clinics that help expand access and reduce travel and distance for those requiring health checks and procedures. Ideally these will be designed with solar/battery energy technologies to ensure reliability and provide critical cooling (for staff/patients and for temperature-controlled medical supplies). |

| Create '15-minute cities' |
|---|---|---|
| Implement urban planning policies to promote the '15-minute city' (or 'complete neighbourhoods') as a framework for recovery |
| **Mayors’ Agenda for a Green and Just Recovery**<sup>240</sup>  
**How to Build Back Better with a 15-Minute City**<sup>241</sup> |
| To develop local urban life and help neighbourhoods to thrive, cities can: promote active ground floors and bustling streets; encourage the flexible use of buildings and public space. |

| Urban densification and mixed-use development through brownfield redevelopment and transit-oriented development |
|---|---|
| **Focused Acceleration — A Strategic Approach to Climate Action in Cities**<sup>242</sup> |
| Through revitalisation/redevelopment programmes and transport and mobility planning functions, prioritise mixed-use, walkable, dense urban and peri-urban centres with enhanced offerings for mobility and public transit. |

<p>| Create complete neighbourhoods by decentralising core services and developing a social and functional mix |
|---|---|
| <strong>How to Build Back Better with a 15-Minute City</strong>&lt;sup&gt;243&lt;/sup&gt; |
| Ensure that shops selling fresh food are present in all neighbourhoods; update the city’s plans and zoning to ensure that they require critical public services, infrastructure and green space to be accessible to all residents at neighbourhood level; promote affordable housing in each neighbourhood. |</p>
<table>
<thead>
<tr>
<th>Encourage teleworking and service digitalisation to limit the need for travel</th>
<th>How to Build Back Better with a 15-Minute City</th>
<th>City governments can support teleworking and service digitalisation by: increasing the digital service offering and leading by example; consulting business leaders to understand the barriers to remote working; increasing the provision of widespread wi-fi and high-speed internet; promoting neighbourhood co-working spaces.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Impose a development tax or impact fees to internalise the cost development in unserved areas</td>
<td>How National Governments Can Deliver Affordable Housing and Compact Urban Development</td>
<td>Charged directly to developers, impact fees can be structured to recover the social cost of converting other land uses to housing. They help encourage the redevelopment of existing built areas or higher-density development.</td>
</tr>
<tr>
<td>Programme public buildings for dual use</td>
<td>Welcome to the 15-Minute City</td>
<td>Buildings with intermittent uses, such as schools, can be managed to serve residents with other needs or for other programmed uses when classes are not in session, increasing the range of accessible local services and activities.</td>
</tr>
<tr>
<td>Reform zoning laws to allow more, alternative commercial uses of buildings within certain neighbourhoods</td>
<td>Put Tiny Businesses Back in Residential Neighbourhoods</td>
<td>Increase the permitted/permissible range of uses, such as small corner stores/general amenities to be established within residential neighbourhoods.</td>
</tr>
<tr>
<td>Building-code revisions for home-office/live-work spaces</td>
<td>Leaning Toward Live-Work</td>
<td>Implement voluntary or mandatory code requirements for new developments to regulate or incentivise space for home-working and/or shared-working spaces in multi-unit residential buildings; allow small out-buildings to be constructed on existing residential lots for home-office or small commercial use.</td>
</tr>
<tr>
<td>Innovative local-area delivery approaches for e-commerce services</td>
<td>3 Ways China’s Transport Sector Is Working to Recover from COVID-19 Lockdowns</td>
<td>Mix local-area freight-consolidation strategies with the exploration of new technologies for contactless, last-mile deliveries such as drones and autonomous electric delivery robots) to ensure e-commerce services can serve local residents without increasing congestion.</td>
</tr>
<tr>
<td>Metropolitan strategic transport governance</td>
<td>Key Policy Interventions to Drive Compact and Connected Urban Growth</td>
<td>Reform governance so that key transport governance powers (fiscal, decision-making, infrastructure delivery and operations) are set at the metropolitan level to ensure a coherent approach to multi-modal transport and the presence of multiple activity nodes across an urban area.</td>
</tr>
</tbody>
</table>
## Give streets back to people

<table>
<thead>
<tr>
<th>Providing space for street life</th>
<th>Prioritising Cyclists and Pedestrians for a Safer, Stronger Recovery[^252]</th>
<th>Widen footways, convert parking bays or pedestrianise streets, high streets and other busy streets; increase safe spaces for exercise and play.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Expand bike lanes and sidewalks as well as bike parking (residential, office, commercial), permanently reallocate more road space to walking and cycling, invest in citywide walking and cycling networks</td>
<td>Sustainable Recovery Plan[^253]</td>
<td>Make temporary expansions in bike lanes and sidewalks permanent, with an immediate boost to construction job creation, as well as to spill-over jobs in tourism, repair and bike sales. Provide more walking and cycling infrastructure through the creation of strategic cycling corridors, the establishment of low-traffic neighbourhoods and the creation of walking connections and walkable spaces.</td>
</tr>
<tr>
<td>Introduce low-emission zones or zero-emission areas</td>
<td>C40 Decarbonisation Pathways Model, Green and Healthy Streets Declaration[^256]</td>
<td>Prioritise non-motorised or clean vehicle technologies by restricting access to internal combustion engine vehicles.</td>
</tr>
<tr>
<td>Bike purchase and repair incentives</td>
<td>Sustainable Recovery Plan[^256]</td>
<td>Provide subsidies for people to purchase or repair bikes to support a modal shift away from cars.</td>
</tr>
<tr>
<td>Enable safe travel within cities</td>
<td>Prioritising Cyclists and Pedestrians for a Safer, Stronger Recovery[^257]</td>
<td>Install temporary cycle lanes and wider walkways; improve the quality of permanent walking and cycling infrastructure, plug gaps in existing networks and expand cycle routes to city periphery and underserved areas; expand cycle-share systems, including to underserved areas and priority groups; increase and improve subsidies for bikes and e-bikes; introduce lower local speed limits; support jobs and businesses associated with walking and cycling.</td>
</tr>
<tr>
<td>Expand bike parking (residential, office, commercial)</td>
<td>C40 Decarbonisation Pathways Model</td>
<td>Through advocacy, incentives or building codes, increase space for internal and external bike parking in ways that support improved access and security.</td>
</tr>
<tr>
<td>Eliminate parking-requirement minimums and instead set maximum amounts allowed for new developments</td>
<td>Key Policy Interventions to Drive Compact and Connected Urban Growth[^258]</td>
<td>Limit parking to disincentivise private vehicle use and ownership and incentivise other mobility options (walking, cycling and public transport).</td>
</tr>
<tr>
<td>Increase parking fees (street parking, garages)</td>
<td>C40 Decarbonisation Pathways Model</td>
<td>Disincentivise vehicle use/ownership in congested areas.</td>
</tr>
<tr>
<td>Replace street parking with bike parking, parklets, trees, outdoor seating, etc</td>
<td>C40 Decarbonisation Pathways Model</td>
<td>Disincentivise vehicle use/ownership in congested areas while freeing up space for other uses.</td>
</tr>
</tbody>
</table>

[^252]: Prioritising Cyclists and Pedestrians for a Safer, Stronger Recovery[^252]  
[^253]: Sustainable Recovery Plan[^253]  
[^254]: Mayors’ Agenda for a Green and Just Recovery[^254]  
[^255]: Green and Healthy Streets Declaration[^255]  
[^256]: Sustainable Recovery Plan[^256]  
[^257]: Prioritising Cyclists and Pedestrians for a Safer, Stronger Recovery[^257]  
[^258]: Key Policy Interventions to Drive Compact and Connected Urban Growth[^258]
<table>
<thead>
<tr>
<th>Interventions</th>
<th>Source</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Congestion charging and/or other forms of road-usage charging measures (such as electronic tolling gantries) to reduce vehicle entry to core urban areas during certain periods</td>
<td>Key Policy Interventions to Drive Compact and Connected Urban Growth(^{259}) C40 Decarbonisation Pathways Model</td>
<td>Usage charges are a useful tool for reducing congestion and space allocation for private vehicles, freeing up more road space for walking and cycling.</td>
</tr>
<tr>
<td>Traffic bans on certain streets on weekends</td>
<td>Welcome to the 15-Minute City(^{260})</td>
<td>Increase active recreation and communal gathering spaces and help draw a wider group of participants to active recreation activities by improving walking and cycling safety.</td>
</tr>
<tr>
<td>Install urban canopies for sun and heat protection on streets</td>
<td>Heat and the Urban Tree Canopy(^{261})</td>
<td>Create shaded areas on public thoroughfares to encourage pedestrian traffic and street commerce, while combatting urban heat-island effects and heat exposure in under-shaded urban areas.</td>
</tr>
<tr>
<td>Reduce speed limits and roll out car-free or car-light streets around schools, hospitals, educational centres and cultural areas; create multi-modal shared streets</td>
<td>C40 Decarbonisation Pathways Model Mayors’ Agenda for a Green and Just Recovery(^{262})</td>
<td>Introduce regulations or design standards to reduce vehicle speed and promote safe, shared use of roadway areas (pedestrians, cyclists, gathering spaces).</td>
</tr>
<tr>
<td>Promote low-speed, individualised and flexible mobility solutions</td>
<td>The Future of Mobility Is at Our Doorstep(^{263})</td>
<td>Through regulation or direct partnerships, increase the availability of bicycle, scooter, mini-car, and other low-speed, human- or electric-powered vehicles for short-term hire or sharing while ensuring sufficient docking, charging and storage infrastructure is in place to improve access, reduce clutter and ensure user safety.</td>
</tr>
<tr>
<td><strong>Build with nature</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Prioritise nature-based solutions (such as parks, green roofs, green walls, blue infrastructure and permeable pavements)</td>
<td>Mayors’ Agenda for a Green and Just Recovery(^{264})</td>
<td>Through strategic planning and investment and building/development and land-use regulations, shift to open-space design and allocation, infrastructure services investment and public and private development practices that create biodiversity and carbon-mitigation and climate-resilience benefits in cities.</td>
</tr>
<tr>
<td>City tree-planting programme</td>
<td>PlaNYC Progress Report(^{265})</td>
<td>Increase urban greenery through city-led tree planting on streets and medians and in city-owned open spaces.</td>
</tr>
<tr>
<td>Introduce climate-friendly building codes that integrate nature-based solutions</td>
<td>Enhancing NDC Through Urban Climate Actions(^{266})</td>
<td>Reform building codes to promote or require the use of green roofs, vertical gardens, bio-swales, etc, to reduce stormwater runoff and urban heat-island effects and to increase local-area biodiversity.</td>
</tr>
<tr>
<td>Improve water management to protect against drought</td>
<td><strong>Enhancing NDC Through Urban Climate Actions</strong>[^267]</td>
<td>Install more rainwater-harvesting technologies at building or neighbourhood scale and set water-consumption targets for industry.</td>
</tr>
<tr>
<td>---------------------------------------------------</td>
<td>---------------------------------------------------</td>
<td>----------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Maintain a database of historical and up-to-date flood maps</td>
<td><strong>Enhancing NDC Through Urban Climate Actions</strong>[^268]</td>
<td>Establish data collection and surveillance to identify coastal and riverine at-risk areas to improve early warning systems, insurance coverage and investment planning for sea walls and other flood-prevention systems.</td>
</tr>
<tr>
<td>Retain and restore sensitive coastal and riverine ecologies</td>
<td><strong>The Case for Restoring Coastal Ecosystems</strong>[^269] <strong>Stream and Watershed Restoration: A Guide to Restoring Riverine Processes and Habitats</strong>[^270]</td>
<td>Create no-development zones or implement redevelopment plans so tidal marshes, mangroves, flood plains, etc, are kept free of destruction and development and/or restored as part of urban parks, open spaces or green infrastructure solutions (such as stormwater retention and treatment).</td>
</tr>
<tr>
<td>Create comprehensive ‘sponge city’ plans</td>
<td><strong>“Sponge City” in China — Planning and Flood Risk Management in the Urban Context</strong>[^271]</td>
<td>Implement a comprehensive spatial and investment planning approach to tackle urban surface-water flooding and related urban water-management issues (stormwater pollution, stormwater attenuation, water-use efficiency and reuse).</td>
</tr>
<tr>
<td>Urban and peri-urban agriculture and aquaculture</td>
<td><strong>Urban and Peri-Urban Agriculture Research Service Blog</strong>[^272]</td>
<td>Introduce planning/development regulations and incentives to allow or promote food production in urban areas/urbanised regions through market gardens, vertical and roof farms and fish/shellfish farms, which may also play a role in land preservation and ecological restoration.</td>
</tr>
</tbody>
</table>

[^267]: Enhancing NDC Through Urban Climate Actions
[^268]: Enhancing NDC Through Urban Climate Actions
[^269]: The Case for Restoring Coastal Ecosystems
[^270]: Stream and Watershed Restoration: A Guide to Restoring Riverine Processes and Habitats
[^271]: “Sponge City” in China — Planning and Flood Risk Management in the Urban Context
[^272]: Urban and Peri-Urban Agriculture Research Service Blog
### Appendix B - Policy Decision-Support Qualifiers

<table>
<thead>
<tr>
<th>Co-benefits</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Corresponding SDG(s)</td>
<td>Connection to one or several SDGs (where SDG indicators can potentially be used to track effects)</td>
</tr>
<tr>
<td>Cross-cutting with other MTF action areas</td>
<td>Overlap/synergy with one or several of the eight action areas</td>
</tr>
<tr>
<td>Local job-creation potential (high/medium/low)</td>
<td>Extent to which activities require local labour, draw on local supply chains and create net new employment (rather than shift jobs from incumbent to new activity)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Finance mechanisms[^273]</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>City operating expenditure (on-budget)</td>
<td>Spending on programmes and functional activities, funded by own-source revenue and transfers from other levels of government</td>
</tr>
<tr>
<td>City capital expenditure (on-budget)</td>
<td>Spending through capital budgets via debt issuance (concessional and commercial), with liabilities repaid from own-source revenue and transfers from other levels of government</td>
</tr>
<tr>
<td>City capital expenditure (off-budget, bonds and loans)</td>
<td>Spending through capital budgets via commercial finance or bonds, with repayment tied to asset revenue</td>
</tr>
<tr>
<td>City capital expenditure (off-budget, PPPs)</td>
<td>Government acts as project initiator or sponsor, but relies on private capital and (potentially) private operating capacity; PPPs can be based on, for example, franchise agreements, service agreements, leasing arrangements, etc, and may include a government contribution of land or fixed capital</td>
</tr>
<tr>
<td>City capital expenditure (off-budget, land value capture)</td>
<td>Public capital investments that lead to a private gain that can be capitalised become the basis for repaying project bonds or debt, for example, an uplift in property values</td>
</tr>
<tr>
<td>Regulations and standards</td>
<td>Standard setting to influence the operating or investment decisions of private entities; may require government operating resources for setting and managing regulations and compliance (non-compliance may prove a source of government revenue, for example, carbon taxes)</td>
</tr>
<tr>
<td>Information and behavioural nudges</td>
<td>Through the government’s ability to collect and disseminate data and provide messaging and information services to its citizens, create changes in individual and corporate behaviours in support of policy objectives</td>
</tr>
</tbody>
</table>
## Co-financing

<table>
<thead>
<tr>
<th>Voluntary agreements and partnerships</th>
<th>Jointly operated or co-funded programmes between local government and private or not-for-profit partners, for example, education and training; or agreements by private actors to implement programmes or bring forward capital expenditure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Multiple partners, public or private</td>
<td>Capital expenditure bringing together public and/or private debt and equity funders in addition to city government</td>
</tr>
<tr>
<td>Blended investment (outside-source concessional debt)</td>
<td>Concessional grants or capital from institutions such as MDBs, international financial institutions or national development banks, blended with sources of municipal debt or equity to reduce the total finance burden borne by local government and to share risk among multiple parties</td>
</tr>
<tr>
<td>Blended investment (public risk mitigation capital)</td>
<td>Using government capital (debt or equity) in a catalytic role to reduce risk and crowd in private investment</td>
</tr>
</tbody>
</table>

## Budgeting considerations

<table>
<thead>
<tr>
<th>Revenue potential</th>
<th>Does the programme or investment create a source of revenue to support the intervention or co-fund other objectives, for example, congestion charges dedicated to expanding mass transit services</th>
</tr>
</thead>
<tbody>
<tr>
<td>Revenue foregone (for example, incentives)</td>
<td>Incentivise private opex or capex spending to support public objectives/goods, for instance, a reduction in taxes or fees, or additional floor-area allowances or expedited approvals</td>
</tr>
<tr>
<td>Operational budget reallocation</td>
<td>Can reallocating expenditure from an existing programme fund the policy? For example, does it transfer from a business-as-usual (non-green) activity to the new activity that reflects changes in city programmes or priorities?</td>
</tr>
<tr>
<td>Capital budget reallocation</td>
<td>Can reallocating expenditure from an existing programme fund the policy? For example, does it transfer from a business-as-usual (non-green) activity to the new activity that reflects changes in city programmes or priorities?</td>
</tr>
<tr>
<td>Operating budget need (high/medium/low)</td>
<td>What is the scale of the programme expenditure within the overall municipal budget (suggesting lower operating cost items may present ‘quick wins’ with a shorter implementation timeframe)?</td>
</tr>
<tr>
<td>Investment capital need (high/medium/low)</td>
<td>What is the ‘ticket size’ of the investment (suggesting lower capital investment items may present ‘quick wins’ with a shorter implementation timeframe)?</td>
</tr>
<tr>
<td>Potential risks and barriers</td>
<td></td>
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<td>-----------------------------------------------------------------</td>
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</tr>
<tr>
<td>Political capital (high/medium/low)</td>
<td>Will vested interests or public acceptability work for or against the city in generating support for the policy and in implementing the programme or capital investment?</td>
</tr>
<tr>
<td>Inability to generate attractive private returns</td>
<td>Projects that lack revenue or private value gain potential requiring full public debt or equity finance</td>
</tr>
<tr>
<td>Technology risk (high/medium/low)</td>
<td>Does the programme or investment rely on ‘off-the-shelf’, well-tested technology or a level of trialling emerging technology, or does it require high levels of innovation?</td>
</tr>
</tbody>
</table>
## Appendix C — National government stimulus packages

<table>
<thead>
<tr>
<th>Country</th>
<th>Description of policy</th>
<th>Status</th>
<th>Local currency</th>
<th>Financing source</th>
<th>MTF action area</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brazil</td>
<td>Infusion of funds into BNDES to use as grants to help de-risk energy-efficiency improvements, as well as create new financial mechanisms for more green bond issuance for sustainable infrastructure&lt;sup&gt;275, 276&lt;/sup&gt;</td>
<td>Implemented</td>
<td>BRL 30 million (USD 5.81 million)</td>
<td>National budget transfer</td>
<td>Action 1</td>
<td>Brazil’s stimulus does not appear to be as ambitious as others, notably lacking a long-term strategy to shift the economy to more a more sustainable path. Although the measures offer financing for energy efficiency and sustainable infrastructure, any climate gains are offset by the continuation and encouragement of policies that exacerbate deforestation in the Amazon.</td>
</tr>
<tr>
<td>Canada</td>
<td>Accelerated disbursement of Federal Gas Tax Fund money, meant for local infrastructure projects, such as public transit, wastewater infrastructure, local roads and bridges&lt;sup&gt;277&lt;/sup&gt;</td>
<td>Implemented</td>
<td>CAD 2.2 billion (USD 1.71 billion)</td>
<td>Federal Gas Tax Fund</td>
<td>Action 5, Action 6</td>
<td>Canada’s stimulus plans appear to address specific environmental concerns, especially emissions from its oil and gas sector. Although the stimulus includes provisions to encourage more local infrastructure and indigenous engagement in clean-energy and sustainability projects, it still revolves around preserving the place of the oil and gas sector in Canada’s economy and does not overhaul it in favour of renewables.</td>
</tr>
<tr>
<td></td>
<td>Establishment of an Emissions Reduction Fund to help oil and gas companies to reduce emissions, especially methane, and to clean and plug ‘orphan’ wells, creating 5,200 jobs&lt;sup&gt;278, 279&lt;/sup&gt;</td>
<td>Implemented</td>
<td>CAD 2.5 billion (USD 1.94 billion)</td>
<td>Federal govt grants and loans, federal budget</td>
<td>Action 1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Support for indigenous participation in clean-energy platforms, creating infrastructure funds to invest in sustainable infrastructure in indigenous communities&lt;sup&gt;280&lt;/sup&gt;</td>
<td>Proposed</td>
<td>CAD 1.5 billion (USD 1.17 billion)</td>
<td>National govt</td>
<td>Action 1, Action 3, Action 5</td>
<td></td>
</tr>
</tbody>
</table>

<sup>1</sup> As of 28 September 2020
<table>
<thead>
<tr>
<th>Country</th>
<th>Description</th>
<th>Fiscal Action</th>
<th>Amount</th>
<th>Key Sectors</th>
<th>Funding</th>
<th>Action(s)</th>
<th>Additional Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>China</td>
<td>Development of ‘new infrastructure’ (such as more renewables, hydrogen, ultra-high voltage transmission lines, electric-vehicle charging stations and high-speed rail)²⁸¹, ²⁸², ²⁸³</td>
<td>Implemented</td>
<td>RMB 170 billion (USD 26.03 billion)</td>
<td>National govt budget</td>
<td>Action 1, Action 4</td>
<td>China’s stimulus package has learned from its 2008-2009 experience and is far more measured, with targeted sectors for infrastructure development. It even has dedicated some funds to environmental protection, ecological restoration and other green activities. Still, the stimulus also includes much support for coal plants and does not identify a green recovery as its main goal. Rather, the main goal appears to be an overall strengthening of both emerging and traditional sectors to protect and create as many jobs as possible.</td>
<td></td>
</tr>
<tr>
<td>China</td>
<td>Establishment of a National Green Development Fund that focuses on environmental protection and pollution control, ecological restoration and land and space greening, energy conservation and utilisation, green transportation, clean energy and other fields²⁸⁴</td>
<td>Implemented</td>
<td>RMB 10 billion (USD 1.53 billion)²</td>
<td>National govt budget, some provincial and municipal budgets, some financial institution participation</td>
<td>Action 1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>China</td>
<td>Extension of the vehicle purchase-tax exemption programme for new-energy vehicles for two years to boost sales of electric vehicles; vehicles exempted include pure electric vehicles, plug-in hybrids and fuel-cell vehicles²⁸⁵, ²⁸⁶</td>
<td>Implemented</td>
<td>N/A</td>
<td>Tax or royalty or govt fee break (GRF)</td>
<td>Action 1</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

² All currency conversions in this table, except NGN to USD, were made 2020-12-04, using the following currency converter: https://sdw.ecb.europa.eu/curConverter.do?sourceAmount=37.2&sourceCurrency=GBP&targetCurrency=USD&inputDate=04-12-2020&submitConvert.x=0&submitConvert.y=0. For NGN to USD, the following currency converter was used: https://www.xe.com/currencyconverter/convert/?Amount=240&From=NGN&To=USD
| EU | Installation of 1 million charging points; clean fleet renewals in cities and companies; investment in Horizon Europe to drive innovation in the next-generation energy sectors; ushering in a ‘renovation wave’ of energy efficiency improvements - all of which could create more than 700,000 jobs287, 288 | Implemented | EUR 750 billion (USD 911.92 billion) | Borrowing EUR 750 billion euros (EUR 390 billion in grants, EUR 360 billion in loans) through financial markets, as well as raising the EU budget to EUR 1.1 trillion for 2021-2027; 25% of the budget will be spent on climate investments and additional funding for Horizon Europe to drive the energy transition; all funds will be held in the Resilience and Recovery Facility | Action 1, Action 4, Action 8 |
| EU | Recovery funds channelled to strategic digital capacities such as 5G, artificial intelligence, data and cloud infrastructure289 | Implemented | Embedded in the EUR 750 billion recovery package (USD 911.92 billion) | Borrowing EUR 750 billion (EUR 390 billion in grants, EUR 360 billion in loans) through financial markets (drawing on EU credit) and raising the EU budget to EUR 1.1 trillion euros for 2021-2027 | Action 5 |
| EU | Additional support for the Just Transition Mechanism to protect workers who would be affected by the energy transition, in three parts: (1) a dedicated InvestEU Fund, (2) a new EIB loan facility and (3) a Just Transition Fund290, 291, 292, 293 | Implemented | EUR 50 billion (USD 60.8 billion) | It will draw on sources of funding in the EU budget, as well as the EIB, to leverage the necessary private and public resources | Action 3 |

The EU has one of the most progressive green recovery stimulus policies in the world. What sets the strategy apart is the bloc’s apparent commitment to the restructuring of its economy and society to revolve around green and sustainable practices. It will also provide support through its Just Transition Mechanism for those that would be most affected by such an energy transition. Though some commentators suggest the plan could be even more ambitious, it has emerged as the global ‘gold standard’ for fiscal stimuli.
<table>
<thead>
<tr>
<th>Country</th>
<th>Description</th>
<th>Amounts</th>
<th>Source</th>
<th>Action(s)</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>France</td>
<td>Repair 70,000 bikes, install 1,000km of temporary bike lanes, establish an academy for bike mechanics to create 500 jobs a year</td>
<td>Implemented</td>
<td>EUR 60 million (USD 72.95 million)</td>
<td>Government spending via the Energy Efficiency Certificate (CEE) programme</td>
<td>Action 1, Action 3, Action 6, Action 7</td>
</tr>
<tr>
<td></td>
<td>Subsidies for electric and cleaner diesel vehicles, production of batteries and electric vehicles by Renault, install 100,000 charging stations by 2022</td>
<td>Implemented</td>
<td>EUR 8 billion (USD 9.73 billion)</td>
<td>EUR 5 billion state loan to Renault, subsidies covered by state spending, charging stations financed through the CEE</td>
<td>Action 1</td>
</tr>
<tr>
<td>Germany</td>
<td>Increase in federal funding support for regional and municipal public transportation</td>
<td>Approved</td>
<td>EUR 2.5 billion (USD 3.04 billion)</td>
<td>Federal budget</td>
<td>Action 4, Action 6</td>
</tr>
<tr>
<td></td>
<td>Investments in ‘sustainable mobility’ — subsidies for electric vehicles, expansion of charging systems, investment in railway, bus and truck modernisation, promotion of hydrogen technology, removal of cap for solar and wind installation, increase in funding for CO2 building renovation programme — worth EUR 50 billion in total</td>
<td>Approved</td>
<td>EUR 50 billion (USD 60.8 billion)</td>
<td>Federal budget: EUR 2.5 billion for charging stations, EUR 5 billion for railway modernisation, EUR 1.5 billion for CO2 building renovation and others</td>
<td>Action 1, Action 4</td>
</tr>
<tr>
<td>India</td>
<td>Fast-track approval of USD 0.8 billion worth of afforestation projects, financed by the Compensatory Afforestation Fund Management and Planning Authority (CAMPA)</td>
<td>Approved</td>
<td>INR 60 billion (USD 810 million)</td>
<td>State budgets (not the federal budget)</td>
<td>Action 8</td>
</tr>
</tbody>
</table>

The green aspects of France’s stimulus plans focus on greening its transportation sector. Given that the idea of the ‘15-minute city’ has strong support from the Mayor of Paris, French stimulus plans could serve as the prototype for future 15-minute city policies, especially in the transportation sector. Benefits to cities are, for the most part, closely linked to actions/policies in the transportation sector.

Germany’s fiscal stimulus ranks alongside the EU’s as one of the greenest. Germany is also looking to overhaul its economy and society and re-centre them around clean energy. Flows to cities are most likely/a prominent feature of actions to transform urban public transit systems and the energy efficiency of buildings.

The green aspects of India’s fiscal stimulus appear to be well orientated towards nature-based solutions. Overall, however, there does not seem to be a strong focus on a green recovery in India.
<table>
<thead>
<tr>
<th>Country</th>
<th>Description</th>
<th>Status</th>
<th>Amount/Details</th>
<th>Source/Action</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Italy</td>
<td>Reorganisation of the hospital network, recruitment of more doctors, more scholarships for medical students</td>
<td>Implemented</td>
<td>EUR 4.3 billion (USD 5.23 billion) State budget</td>
<td>Action 2, Action 5</td>
<td>Italy’s fiscal stimulus addresses sustainability and green recovery by supporting its essential workers (especially in the medical community), as well as trying to renovate buildings to become more energy efficient and improving the greenness of its transportation sector. Similar to France’s plans, Italy’s fiscal stimulus contains opportunities for cities to make their infrastructure more ‘human-centred’.</td>
</tr>
<tr>
<td></td>
<td>Tax credits for energy-efficiency retrofits in buildings, as well as solar photovoltaic (PV) and electric-vehicle charging-system installation</td>
<td>Implemented</td>
<td>Tax credit</td>
<td>Action 1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Vouchers for the purchase of bicycles and other mobility devices, temporary increase in subsidies for electric vehicles</td>
<td>Implemented</td>
<td>EUR 120 million (USD 145.91 million) Government subsidy through vouchers, increases in EV subsidies</td>
<td>Action 6, Action 7</td>
<td></td>
</tr>
<tr>
<td>Japan</td>
<td>Direct payments to frontline medical workers</td>
<td>Implemented</td>
<td>JPY 117 trillion (USD 1.12 trillion) Part of this package will be used for payments to frontline medical workers, financed by government bonds</td>
<td>Action 2</td>
<td>Japan’s fiscal stimulus is mainly meant to support medical workers and currently does not contain many, if any, provisions for a green recovery.</td>
</tr>
<tr>
<td>Nigeria</td>
<td>Energy for All - a solar-power strategy that aims to create 250,000 jobs by installing 5 million solar home systems and mini-grids</td>
<td>Approved</td>
<td>NGN 240 billion (USD 630 million) Private-sector finance (unclear how much government aid)</td>
<td>Action 1</td>
<td>Both Nigeria and South Africa’s stimulus plans appear to prioritise jobs over a truly green recovery. Green measures mostly appear to be pre-existing policy goals, such as improving electricity access in Nigeria and improving waste processing in South Africa.</td>
</tr>
<tr>
<td>South Africa</td>
<td>Waste recycling, rehabilitation of ecological infrastructure</td>
<td>Proposed</td>
<td>Unclear</td>
<td>National govt</td>
<td></td>
</tr>
<tr>
<td>South Korea</td>
<td>Boosting renewable energy capacity to 42.7GW by 2025, expanding the green mobility fleet to 1.33 million electric vehicles and hydrogen cars, refurbishing public schools and rental housing to improve energy efficiency and creating a regional energy transition centre to support green transition jobs</td>
<td>Proposed</td>
<td>KRW 73.4 trillion (USD 67.3 billion) This is part of the larger Korean New Deal and will be around 70% financed by the national treasury; the rest will be financed by the private sector and local governments</td>
<td>Action 1, Action 3</td>
<td>The green aspects of South Korea’s plans revolve around generating jobs in the clean energy and energy efficiency sectors. Cities may benefit from proposals for energy-efficient renovations and the expansion of clean-energy mobility solutions.</td>
</tr>
</tbody>
</table>
| UK
| Providing a ‘green homes grant’ for landlords to make energy efficiency improvements to 600,000 homes to create 100,000 jobs; innovation in heavy industry to reduce carbon emissions and create green jobs; a public-sector decarbonisation scheme (the Clean Growth Strategy) to make public facilities, such as schools and hospitals, more energy efficient by 2032 | Implemented | GBP 3.3 billion (USD 4.44 billion) | Government spending through grants (of up to GBP 5,000 per household and GBP 10,000 for low-income households) and the state budget | Action 1 |
| Green Jobs Challenge Fund — providing money to charities and public authorities to improve the natural environment, restore habitats and create green spaces for people and wildlife | Implemented | GBP 40 million (USD 53.87 billion) | Government investment in a fund | Action 1, Action 8 |
| Local ‘shovel-ready’ infrastructure projects out to 2022 (especially for digital connectivity); ‘towns fund’ capital acceleration for up to 101 smaller municipalities to build town centres and high streets and to maintain local roads | Implemented | GBP 1.1 billion (USD 1.48 billion) | Government investment: GBP 900 million for local infrastructure projects, GBP 96 million for the towns fund, GBP 100 million for local road maintenance | Action 6, Action 7 |
| Supporting essential workers through further funding for the National Health Service (NHS) (especially for personal protective equipment), some funding to improve essential public transport | Implemented | GBP 37.2 billion (USD 50.1 billion) | State budget: GBP 31.9 billion to support essential NHS workers, GP 5.3 billion for essential public transport, such as rail, bus and light rail | Action 2, Action 4, Action 5 |

The UK’s stimulus plans emphasise jobs through green initiatives. In particular, the UK appears to be focusing on energy efficiency improvements, more local infrastructure and reducing emissions in heavy industry.
<table>
<thead>
<tr>
<th>Action</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Upgrade the energy efficiency of 4 million buildings and weatherise 2 million homes, achieve a carbon-free power sector by 2035, drive innovation in next-generation clean energy (such as batteries), all with a view to creating millions of jobs. Part of the Biden presidential campaign’s proposed USD 1.7 trillion stimulus and recovery package, paid for by reversing 2017 federal tax cuts, reducing incentives for tax evasion and ending subsidies for fossil fuels.</td>
</tr>
<tr>
<td>2</td>
<td>Create jobs in climate-smart agriculture and in reclaiming/plugging abandoned wells and mines.</td>
</tr>
<tr>
<td>3</td>
<td>Ensure there is environmental justice in order to fairly distribute gains from the green stimulus to those who are most affected, as well as to ensure jobs go to minorities and women.</td>
</tr>
<tr>
<td>4</td>
<td>Invest in widespread digital infrastructure.</td>
</tr>
<tr>
<td>5</td>
<td>Provide each U.S. city with a population of 100,000 or more with a high-quality and zero-emission public transportation system.</td>
</tr>
</tbody>
</table>

All of the U.S. proposals are drawn from president-elect Joe Biden’s campaign stance on climate change and a green recovery. What sets the U.S. plans apart from other plans is that there is a strong emphasis on environmental justice, which reflects how these plans hope to address the societal problems of institutional racism at the same time as creating new jobs in the clean energy, energy efficiency and clean transportation sectors. Stimulus flows can thus support city agendas for just and fair energy transitions.
Endnotes and references


5 | Ibid.


12 | Figures are global averages. Measures that rely more on labour than capital inputs, as is often the case in emerging economies, may yield higher benefits.


18 | Early-warning systems, making new infrastructure resilient, improving dryland agricultural crop production, protecting mangroves and making water-resource management more resilient.

19 | Compared with global GDP of nearly USD 88 trillion in 2019. Figures are global averages. Measures that rely more on labour than capital inputs, as is often the case in emerging economies, may yield higher benefits.


21 | Because of the limited number of responses, the survey results were reviewed for context, but not used in the illustrative policy shortlist.

22 | Stephen Hammer, Advisor, Global Partnership & Strategy (Climate Change) World Bank; Raúl Delgado, Climate Change Lead Specialist, Inter-American Development Bank; and Lauren Sorkin, Executive Director, and Braulio Eduardo Morera, Director of Programs and Innovation, Resilient Cities Network.

23 | Captures implementation objectives, supporting local government actions and/or additional channels through which the policy may be executed.


29 | Requires a value- rather than use-based property tax assessment.


47 | Generated through the European Union-funded Urban Low Emissions Development Strategies (Urban-LEDS) programme, with the involvement of ICLEI - Local Governments for Sustainability, UN-Habitat and the Transformative Actions Program (TAP).


49 | Gulati, M., Becqué, R., Godfrey, N., Akhmouch, A., Cart-

50 These indicators are not exclusive to the financial mechanisms. They are intended to characterise leveraging that may be available.


66 | See the City Creditworthiness Initiative website for more. Other examples include: the Project Preparation Action Group of the Cities Climate Finance Leadership Alliance; the Municipal Investment Financing (MIF) Programme of the United Nations Capital development Fund; the City Resilience Program (CRP), a partnership between the World Bank and the Global Facility for Disaster Reduction and Recovery; and various project preparation facilities of the Inter-American Development Bank, including an NDC Pipeline Accelerator to link projects to the goals of the Paris Agreement.


73 | See the Sub-National Technical Assistance (SNTA) website for more.


75 | Due to this mix of direct and indirect financing, total urban-focused investment volumes are difficult to quantify. By way of example, however, the EIB reports that it invested nearly EUR 150 billion in urban areas between 2012 and 2018 and that about 30% of its total annual lending is dedicated to the EU Urban Agenda. In 2019, the ADB dedicated nearly a quarter of its capital (USD 7.8 billion) to its Making Cities More Liveable strategy. See: EIB (n.d.) Urban Development Sector [online]. Luxembourg: European Investment Bank. Available from: https://www.eib.org/en/projects/sectors/urban-development/index.htm.


82 | Ibid.


85 | The USD 15 trillion covers the G10 group of major economies plus China and includes the increase in central-bank balance sheets, new government cash injections and spending pledges, as well as around USD 7 trillion worth of quasi-fiscal loan and credit guarantees.


87 | Tracking stimulus that meets ‘green economy’ definitions and measures is considerably better represented in the literature than ‘social’ or ‘just’ measures.


95 | Ibid.


97 | One condition imposed on Air France in exchange for a EUR 7bn COVID-19 aid package is to stop competing with
TGV services where rail offers a viable alternative.


114 | The IPSF membership base captures 50% of global GHG emissions and population and 45% of global GDP. Members include China, India, Argentina, Indonesia, Kenya and Senegal.


120 | As a proxy for the scale of investor resources available, there are nearly 2,800 signatories to the Principles for Responsible Investment, representing assets under management of more than USD 100 trillion, committed to integrating environmental, social and governance (ESG) factors into all financial decisions. See https://www.unpri.org/about-the-pri for more.


122 | For information on the commitment and list of investors, see the Climate Action 100+ investors webpage at https://climateaction100.wpcmove.com/investors/.


126 | Ibid.


157 | At the time, there were about 1,000 signatories, with USD 70 trillion in assets under management, so 1% would have been USD 700 billion.


160 | The AfDB, ADB, the Asian Infrastructure Investment Bank (AIIB), the European Bank for Reconstruction and Development (EBRD), EIB, IDB, the Islamic Development Bank (IsDB), the New Development Bank (NDB) and the World Bank.


183 | Ibid.


190 | C40 (2020). C40 Mayors’ Agenda for a Green and
Financing a green and just recovery | Mayoral Task Force

97


192 | Ibid.


198 | Ibid.


215 | Ibid.


220 | Ibid.


223 | Ibid.

224 | Ibid.


227 | Ibid.


230 | C40 (2020). C40 Mayors’ Agenda for a Green and


244 | Ibid.


259 | Ibid.


267 | Ibid.
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268 | Ibid.


273 | Indicator of a financing mechanism or instrument that could apply to the policy measure; several sources or instruments may be suitable for individual policies.

274 | Indicator of potential to share capital or operating expenditure between parties through one or more of the finance mechanisms described.


285 | State Council of the People’s Republic of China (2020). Announcement of the Ministry of Finance and the State Administration of Taxation Ministry of Industry and Information Technology Announcement No. 21 of 2020 [online, in


298 | Ibid.


301 | Ibid.


Financing a green and just recovery | Mayoral Task Force


307 | Ibid.


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